Diamond Alkali Co.
NJD980528996
8.1.2
Passaic Valley Sewerage Commissioners

Passaic Valley Sewerage Commissioners
Response to Request for Information
USEPA, Region 2

Item No. 1.d
PVSC Report 1.d

Document order #5

Killam
Associates ▫ Consulting Engineers

Corporate Headquarters
27 Bleeker Street
Millburn, NJ 07041-1008
201-379-3400

Other offices
New Jersey
Pennsylvania
New York
Massachusetts
Ohio

a subsidiary of
Thermo Process Systems, Inc.,
a Thermo Electron Company.

Passaic Valley Sewerage Commissioners
Response to Request for Information
USEPA, Region 2

Item No. 1.d

PVSC Report 1.d

Passaic Valley Sewerage Commissioners

Interim

Service Area Drainage and Land Use Report for the Towns of Harrison and Kearny, The Borough of East Newark, and the Cities of Newark and Paterson

Appendix C

Combined Sewer Overflow

Drainage Area and Control Information

City of Newark

February 1996

946200002

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

VERONA AVENUE, NEWARK
N-001

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY 07041

VERONA AVENUE OVERFLOW CHAMBER

The Verona Avenue overflow chamber serves a tributary area of 367 acres. This area is provided with combined sewers, and the average daily dry weather flow was determined to be 1.4 MGD. The measured average daily dry weather flow was found to be 1.6 MGD during dry weather months and about 2.3 MGD during wet weather months. The high infiltration of approximately 0.9 MGD during wet weather months is indicative of typical combined sewer construction, with joints that are not tight and which permit infiltration.

Metering and sampling facilities were installed and maintained in this chamber from December 31, 1974, extending through June 29, 1975. During this period of time, 50 rainfalls occurred. Overflows were measured or observed on 36 occasions. Overflows were found to occur whenever the average rainfall intensity was in excess of about 0.05 inches per hour.

The overflow at this station was found to range from a low of only a negligible amount to a high of about 2.2 MG. A peak flow rate of 80 MGD was measured. This occurred during a period of extremely intense rainfall (1.9 inches per hour). However, under this condition, because of the short time duration, the overflow into the river was only 1.5 MG.

Dry weather sampling resulted in suspended solids averaging about 572 mg/l, and BOD concentrations averaging 418 mg/l.

Waste characteristics of the storm flow indicated that the average BOD ranged from about 163 mg/l to 333 mg.l. The suspended solids were found to range from a low of 11 mg/l to a high of 609 mg/l.

OVERFLOW DATA EXTRACT

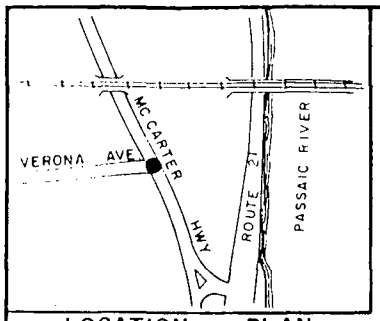
VERONA AVENUE OVERFLOW CHAMBER

NEWARK

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	primarily residential with some (22 percent) industrial flow
Overflow Location (See Plate A):	in southwest corner of intersection of Riverside Avenue (McCarter Highway) and Verona Avenue
District Outlet Sewer (See Plates A and B):	56" diameter brick sewer
Outfall to River (See Plates A and B):	72" x 55" horseshoe brick sewer
Outfall Condition:	clear of debris and functioning
Tidal Effects:	some tidal intrusions noted
Surcharge Effects:	surcharge observed*
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.

*due to capacity limitations and/or tide gate closure during high tide conditions



LOCATION PLAN

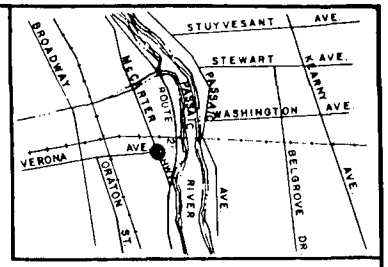
SCALE IN FEET

NOTE:

ALL SIDE PIPELINES EXCEPT PVSC MAIN INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY

LEGEND

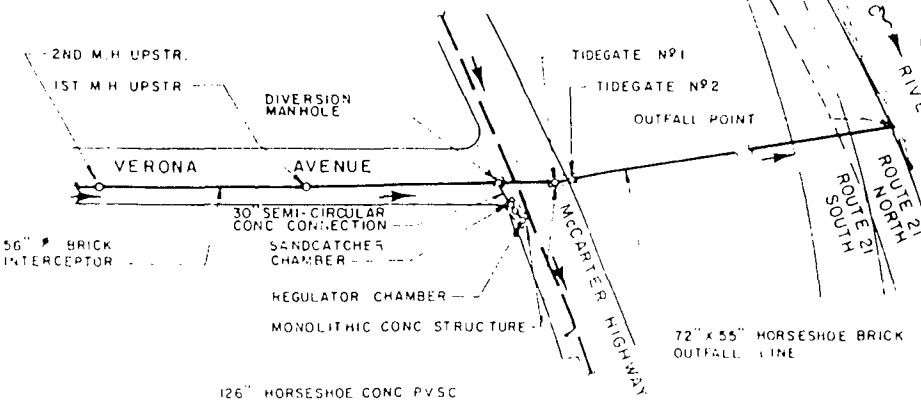
- DIRECTION OF FLOW
- S.C. = SAND CATCHER
- T.G. = TIDE GATE
- UP STR = UP STREAM
- DN STR = DOWN STREAM
- N.T.S. = NOT TO SCALE
- ● = OVERFLOW LOCATION



KEY MAP

2000 1000 0 2000

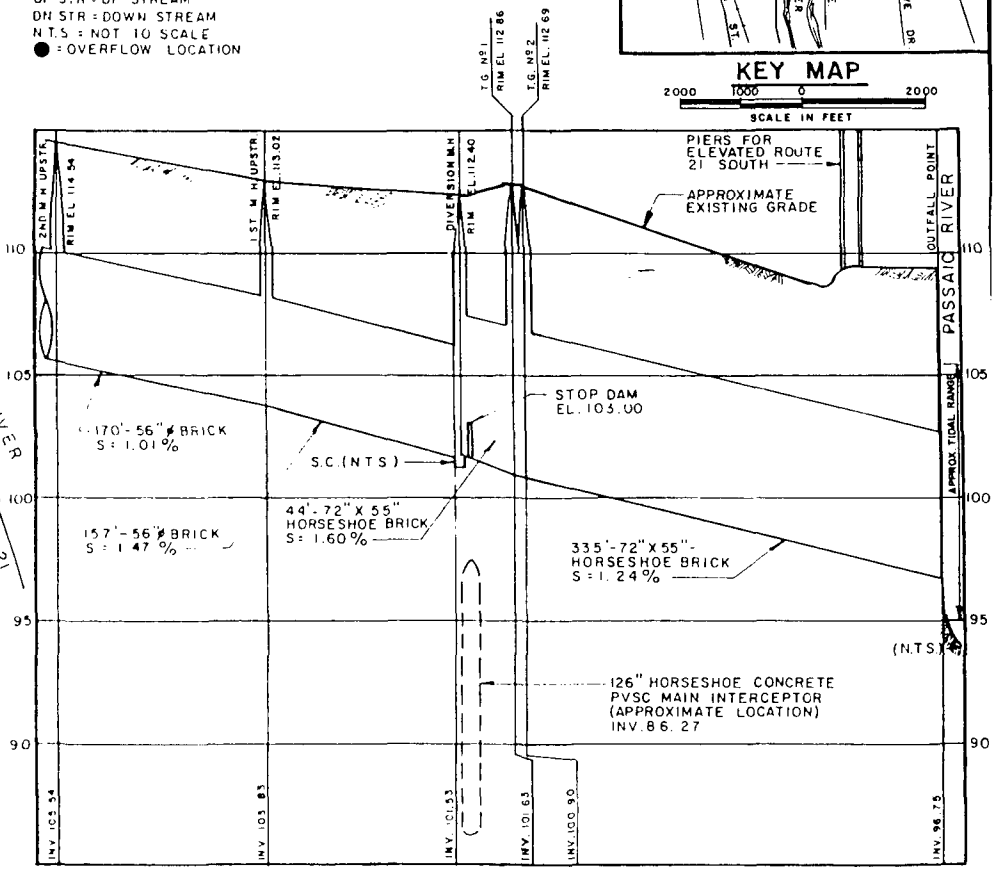
SCALE IN FEET



PLAN

0 50 0 100

SCALE IN FEET



PROFILE

HORIZONTAL 100 50 0 100

SCALE IN FEET

VERTICAL 5 4 3 2 1 0 5

SCALE IN FEET

ALL ELEVATIONS BASED ON P.V.S.C. M.H. Nº 1257 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER N-001

VERONA AVENUE, NEWARK

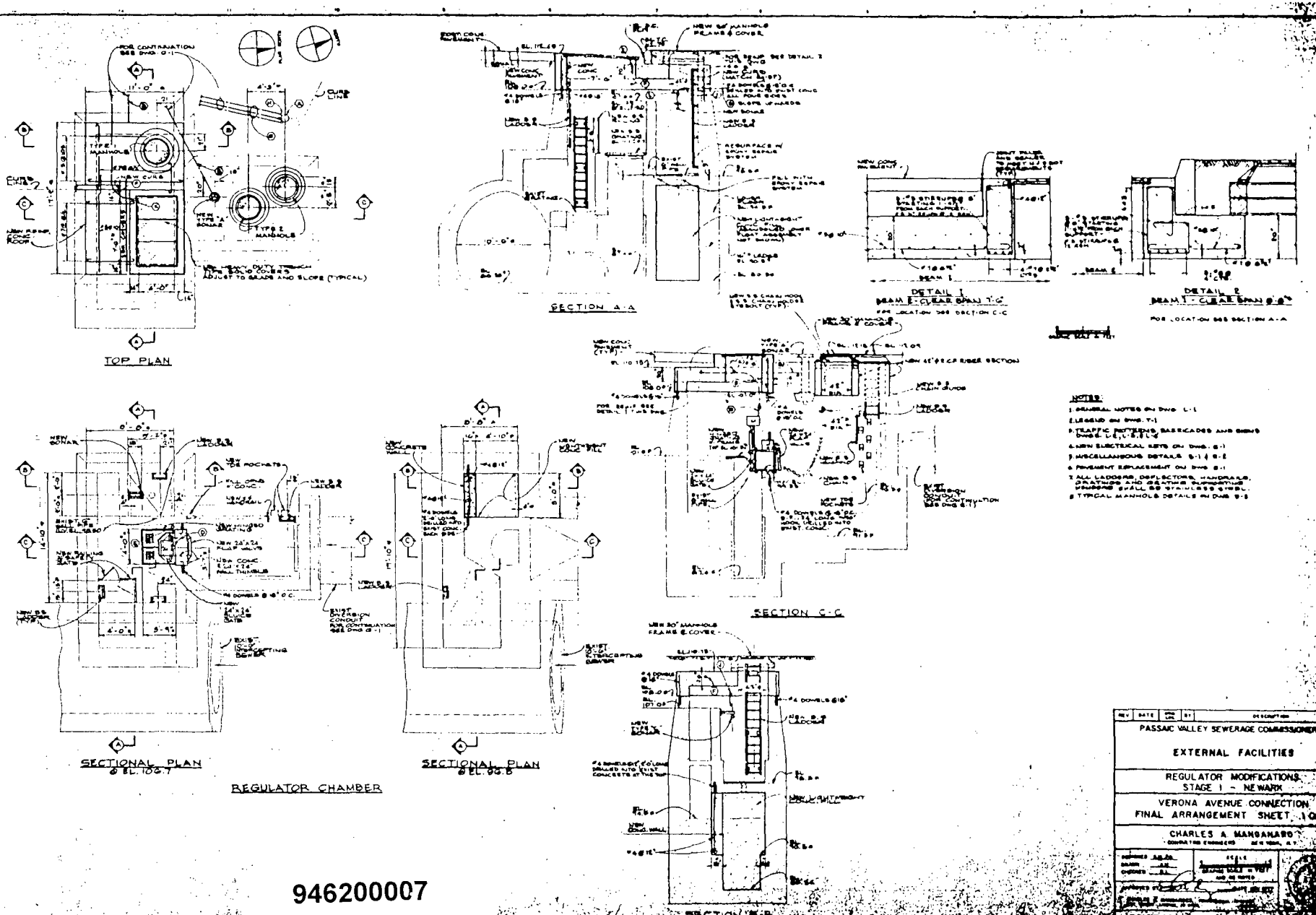
PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

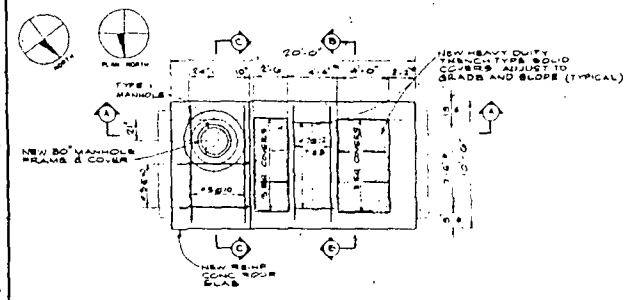
Environmental and Hydraulic Engineers

946200006

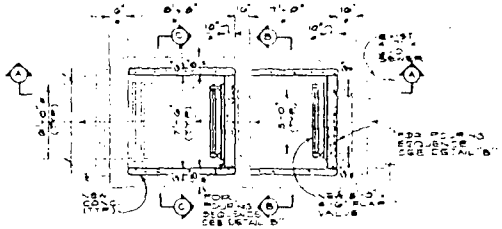
PLATE A


TOP PLAN
SECTION A-A
DETAIL 1
DETAIL 2
SECTIONAL PLAN
SECTIONAL PLAN
REGULATOR CHAMBER
SECTION C-C
SECTION B-B
NOTES
PASSAIC VALLEY SEWERAGE COMMISSIONERS
EXTERNAL FACILITIES
REGULATOR MODIFICATIONS
STAGE 1 - NEWARK
VERONA AVENUE CONNECTION
FINAL ARRANGEMENT SHEET 1 OF 2
CHARLES A. MANGANARO
CONTRACT

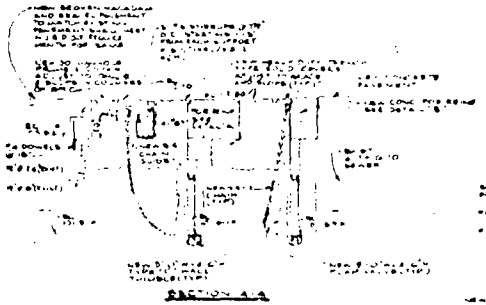
946200007



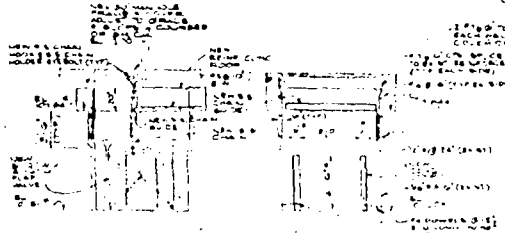
TOP SLAB PLAN



SECTIONAL PLAN



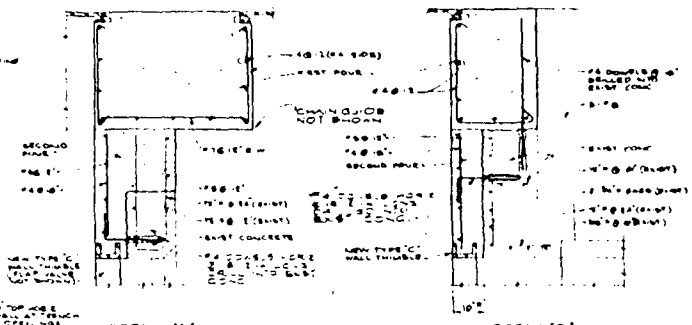
SECTION A-A



SECTION C-C

SECTION B-B

TIDE GATE CHAMBER

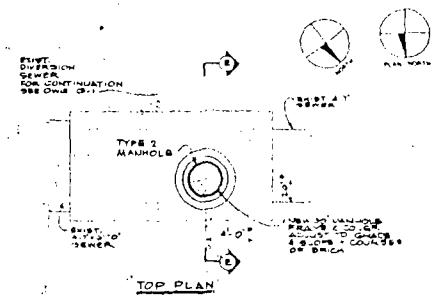


DETAIL 'A'

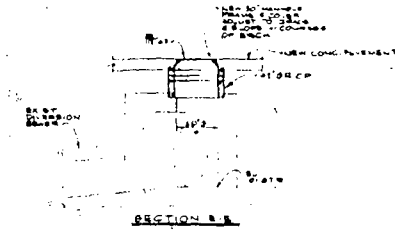
DETAIL 'B'

NOTES

1. FOR NOTES SEE DWG. G-5
2. MANHOLE, SHAFTING AND GRATING & SUPPORTING MEMBERS SHALL BE GALVANIZED STEEL.
3. FOR SHEETING DETAILS SEE DWG No. G-2

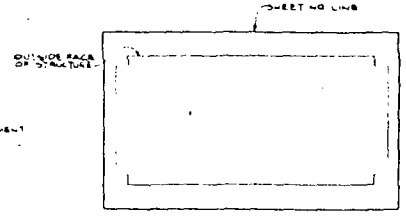


TOP PLAN



SECTION B-B

DIVERSION CHAMBER



SHEETING PLAN

NO SCALE

NOTE FOR SHEETING DETAILS SEE DWG G-2

NO.	DATE	BY	DESCRIPTION

PASSAIC VALLEY SEWERAGE COMMISSIONERS

EXTERNAL FACILITIES

REGULATOR MODIFICATIONS
STAGE I - NEWARK

VERONA AVENUE CONNECTION
FINAL ARRANGEMENT SHEET 2 OF 2

CHARLES A. MANGANARO
CONSULTING ENGINEERS NEW YORK N.Y.

DESIGNED GJS
DRAWN AB
CHECKED GJS

SCALE
ORIGINAL SCALE 1" = 10'
AS NOTED

APPROVED BY

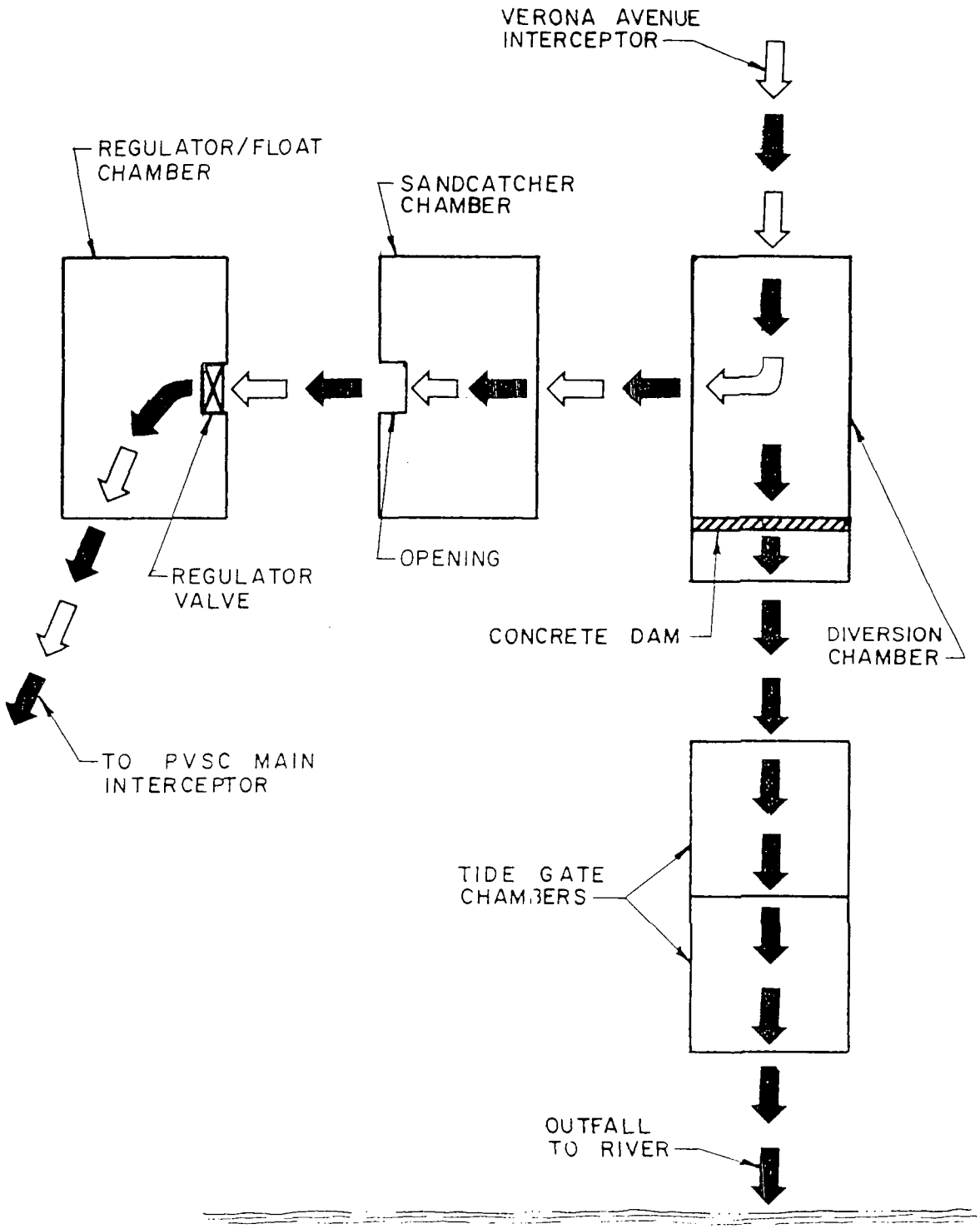
DATE MAY 1972

CHARLES A. MANGANARO, PROFESSIONAL ENGINEER
NEW JERSEY NEW YORK

CONTRACT 489C DRAWING No G-6

946200008

PLATE B-2



PASSAIC VALLEY SEWERAGE COMMISSIONERS

VERONA AVENUE, NEWARK

SCHEMATIC

ELSON T. KILLAM ASSOCIATES INC.

Environmental and Hydraulic Engineers

946200009

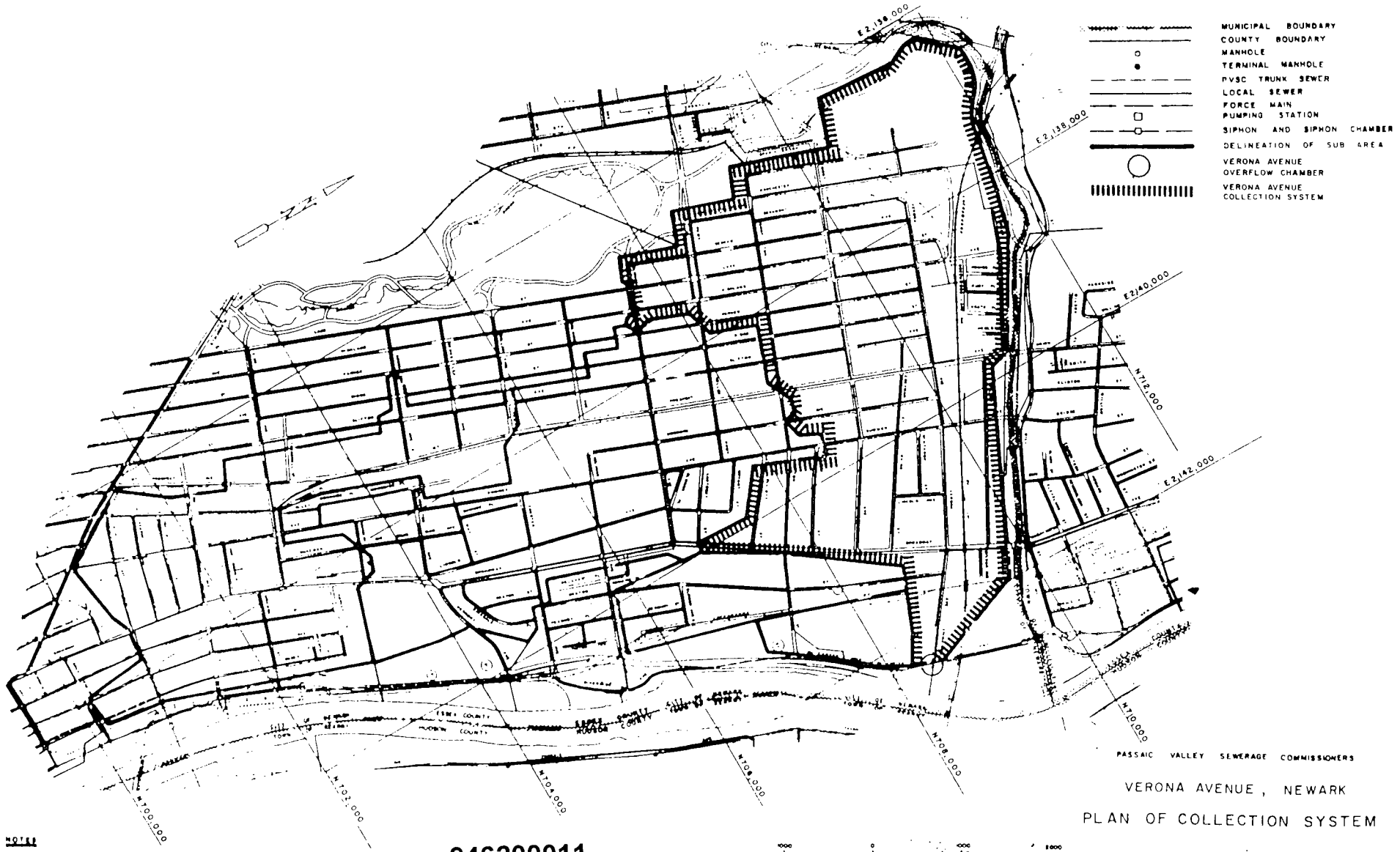
PLATE C

VERONA AVENUE OVERFLOW N-001 (Cont'd)

Condition of Regulator:	appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	stop dam located just beyond diversion chamber at entrance to outfall line
Tide Gate Condition:	both gates leaking
Note:	During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.573 square miles - 367 acres
Average Daily Flow	
Seasonal Dry Weather:	1.59 MGD
Seasonal Wet Weather:	2.28 MGD
Estimated Combined Flow to Produce an Overflow:	19.0 MGD
Approximate Length of Combined Sewers Serving District:	56,800 linear feet



946200011

PLATE D

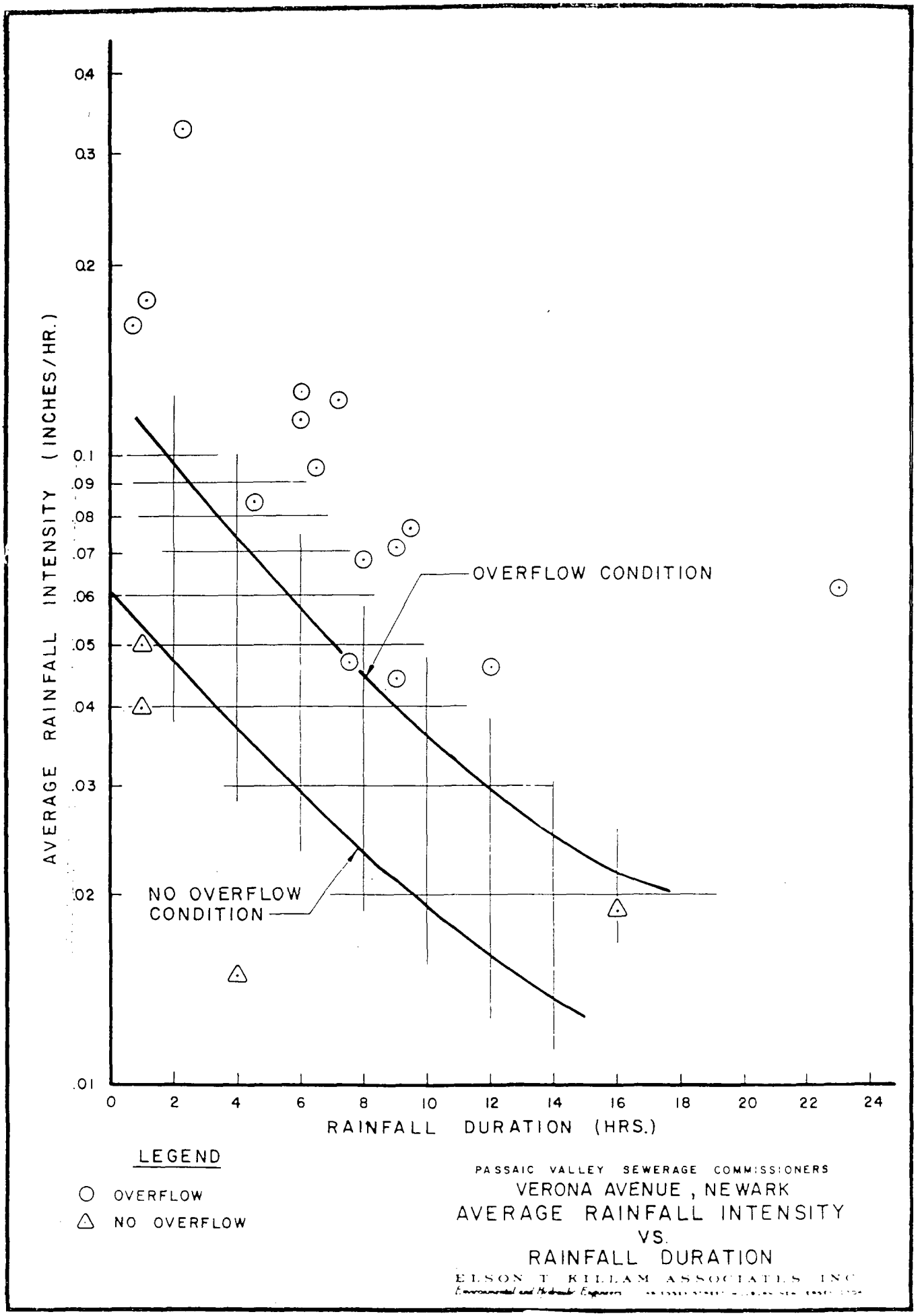
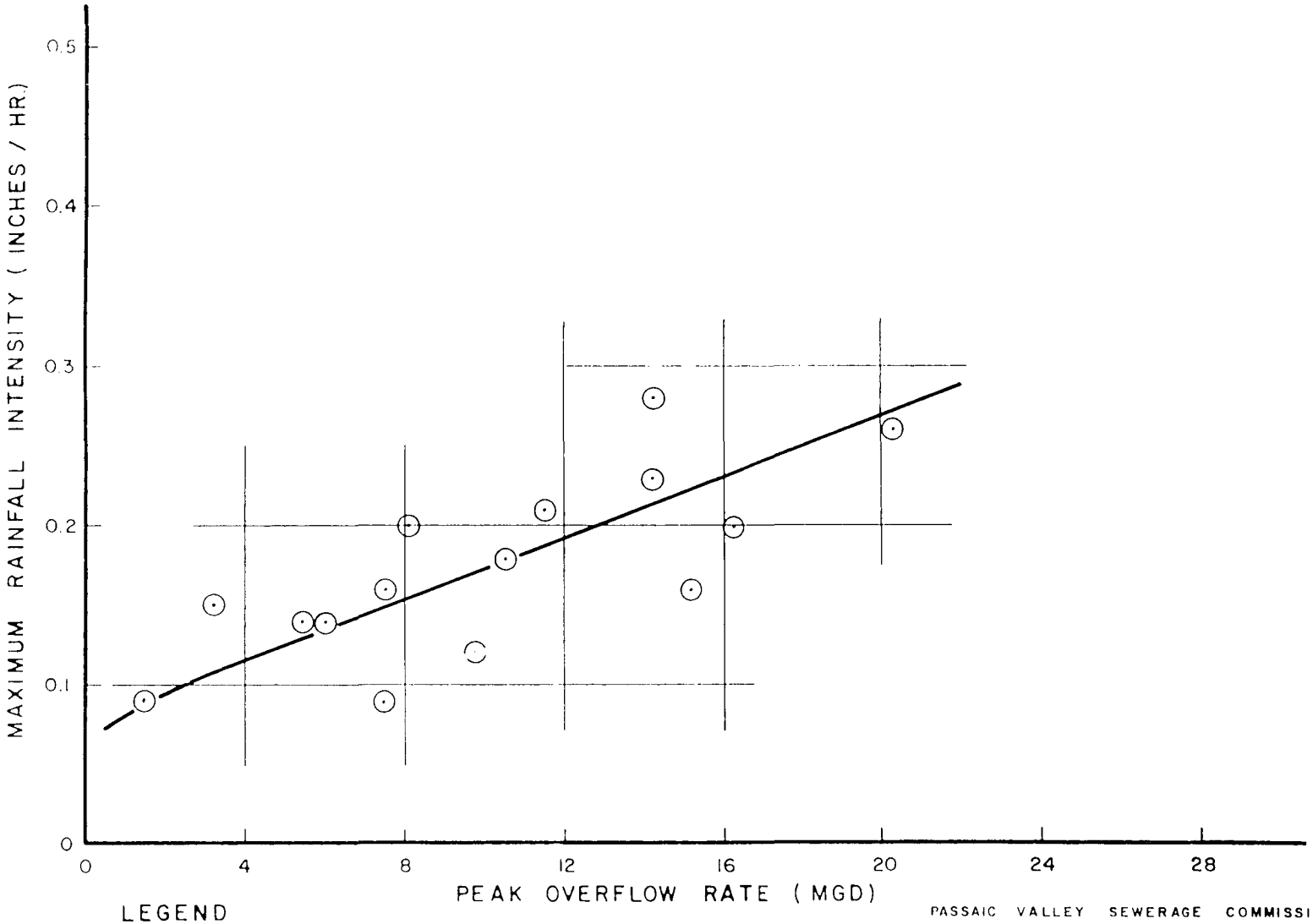


PLATE E

946200012



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

VERONA AVENUE , NEWARK

MAXIMUM RAINFALL INTENSITY

VS.

PEAK OVERFLOW RATE

946200013

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY 07041

PLATE F

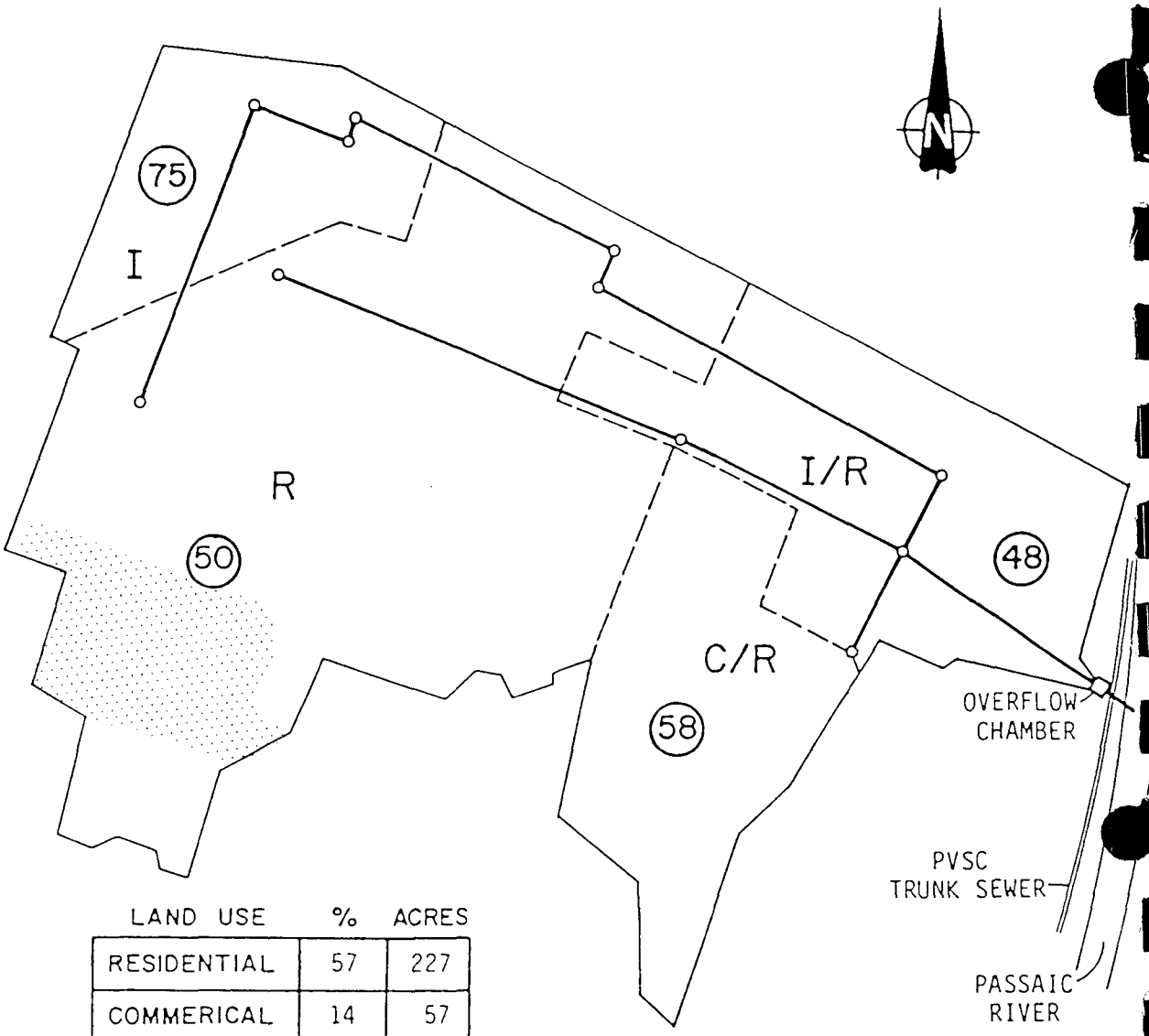
P.V.S.C. Reference # I-35

Date: 9/10/74

Els on Killam Associates-Infiltration Studies
P.V.S.C. Verona Avenue Sand Catcher- Not on trunk line but tributary
24 Samples taken from 12:22 P. M.,9/9/74 to 12:07 P. M. , 9/10/74

Baseline

Sample #	pH	T.S.S	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C/ C.O.D.	B.O.D.	B.O.D./ C.O.D
1	8.0	314	314	100	619	172	27.8	378	61.0
2	7.9	234	222	95.0	506	124	24.5	320	63.2
3	7.7	262	262	100	372	108	29.1	264	70.9
4	9.3	310	282	91.0	388	141	36.3	---	---
5	8.1	216	216	100	302	120	39.6	194	64.2
6	7.5	608	608	100	1027	330	32.2	756+	___
7	6.4	318	318	100	592	168	28.4	441	74.4
8	7.1	252	252	100	416	129	31.1	---	---
9	7.1	524	506	96.8	482	140	29.1	449	93.1
10	7.3	228	228	100	314	96	30.6	---	----
11	7.3	180	180	100	212	76	35.9	---	---
12	7.4	138	138	100	192	60	31.2	152	79.1
13	7.3	104	104	100	161	44	27.3	---	---
14	7.4	114	114	100	122	44	36.1	---	---
15	11.8	840	840	100	913	318	34.8	559	61.2
16	12.1	764	608	79.6	1682	456	27.1	756+	---
17	11.7	682	442	64.7	643	192	29.7	315	48.9
18	12.3	2350	1820	78.0	1964	972	49.7	756+	---
19	9.9	1374	764	55.6	949	324	34.2	411	43.3
20	9.7	644	524	81.3	619	192	31.1	225	36.3
21	11.2	1290	1070	83.0	1015	336	33.0	490	48.3
22	11.9	1040	1030	99.2	1007	304	30.3	490	48.7
23	10.7	530	530	100	647	246	38.0	277	42.8
24	9.7	416	416	100	835	264	31.6	291	34.8



SUB AREA B

LAND USE	%	ACRES
RESIDENTIAL	57	227
COMMERICAL	14	57
INDUSTRIAL	21	83
OPEN/PARKS	0	0
TOTAL	100	370

LEGEND

- MAIN INTERCEPTOR
- R RESIDENTIAL
- C COMMERCIAL
- I INDUSTRIAL
- O/P OPEN/PARK
- SUBCATCHMENT BOUNDARY
- (15) PERCENT IMPERMEABLE AREA WITHIN SUBCATCHMENT
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISSIONERS

NEW JERSEY

COMBINED SEWER OVERFLOW FACILITY PLAN

LAND USE

VERONA AVENUE OVERFLOW

CITY OF NEWARK

Elson T. Killam Associates, Inc.
Environmental and Hydraulic Engineers
27 Bleeker Street Millburn New Jersey 07041

FIGURE N-001

946200015

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

DELAVAN AVENUE, NEWARK
N-002

1976

ELSON T KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers 40 ESSEX STREET, MILLBURN, NEW JERSEY 07041

DELAVAN AVENUE OVERFLOW CHAMBER

The Delavan Avenue overflow serves a tributary area of approximately 88 acres. This district is served with combined sewers. The theoretical average daily flow in the district was determined to be 0.22 MGD. The average daily flow in this district was found to range from 0.2 to 0.4 MGD. Infiltration appears to be servere during the wet weather months, ammounting to 0.2 MGD.

Metering facilities were installed in this chamber from July 12, 1975, through September 9, 1975. During this period of time, at least eight rainfalls occurred with most rainfalls of very substantial intensity. However, no overflow was observed. As a result, a further investigation was made of the upstream collection system, and it was found that an overflow facility located within the City of Newark upstream of this chamber was activated during periods of rainfall. Such overflow is discharged into the Passaic River near Delavan Avenue. This overflow is one of approximately fourteen overflows located within the City of Newark which require additional study to determine the volume and the effect of this pollutional loading upon the Passaic River.

Samples were taken of the dry weather flow which indicated that total suspended solids ranged from less than 10 mg/l up to 320 mg/l, with BOD concentrations varying from a low of 21 mg/l up to 217 mg/l.

Samples were taken of the flow in the sewer during periods of heavy rainfall. It was found that the BOD average was 19 mg/l, but the suspended solids were found to average 125 mg/l.

From the above, it appears that the dilution effect during this storm was apparent. This area is both residential and industrial and the characteristics of the waste under storm flow conditions indicate that serious pollution does not occur. As a matter of fact, no overflow occurs at Delavan Avenue, and the resultant storm overflow from this district must be established from existing overflows within the City system.

ELSON T. KILLAM ASSOCIATES, INC.

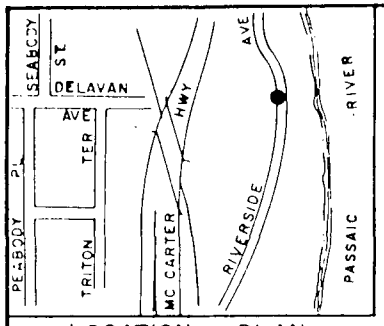
OVERFLOW DATA EXTRACT

DELAVAN AVENUE OVERFLOW CHAMBER

NEWARK

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	primarily industrial, with some (20 percent) domestic flow
Overflow Location (See Plate A):	In west side of Riverside Avenue 300 ft. south of intersection with N. J. Rte. 21.
District Outlet Sewer (See Plates A and B):	1-10" diameter VTP sewer and 1-54" diameter concrete sewer
Outfall to River (See Plates A and B):	60" diameter RCP sewer
Outfall Condition:	clear
Tidal Effects:	none observed
Surcharge Effects:	none evident
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.

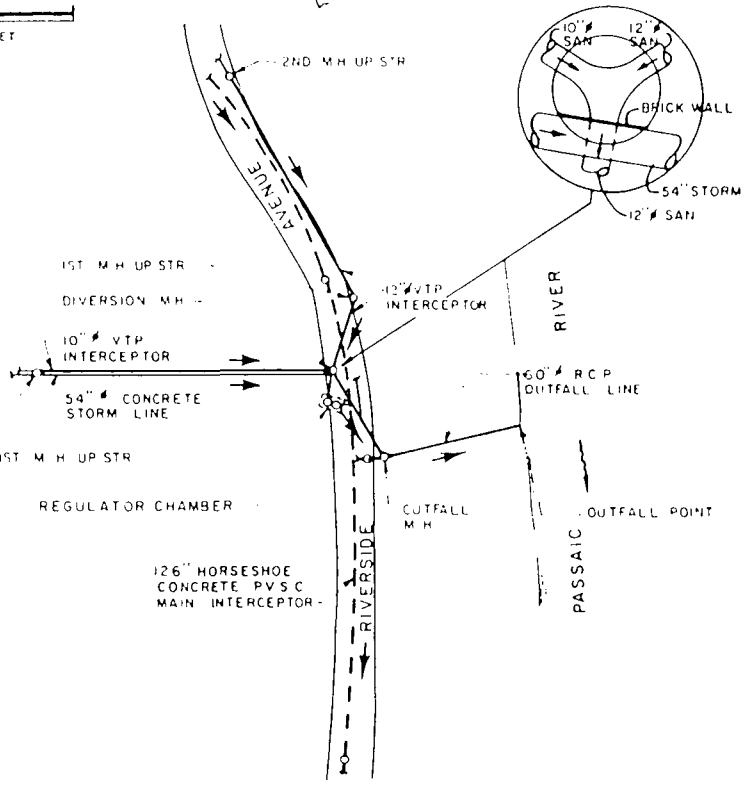


LOCATION PLAN

SCALE IN FEET

NOTE
ALL SIDE PIPELINES EXCEPT PVSC MAIN INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY

LEGEND
- → DIRECTION OF FLOW
- S C = SAND CATCHER
- T G = TIDE GATE
- UP STR = UPSTREAM
- DN STR = DOWNSTREAM
- N T S = NOT TO SCALE
- V T P = VITRIFIED TILE PIPE
- ● = OVERFLOW LOCATION

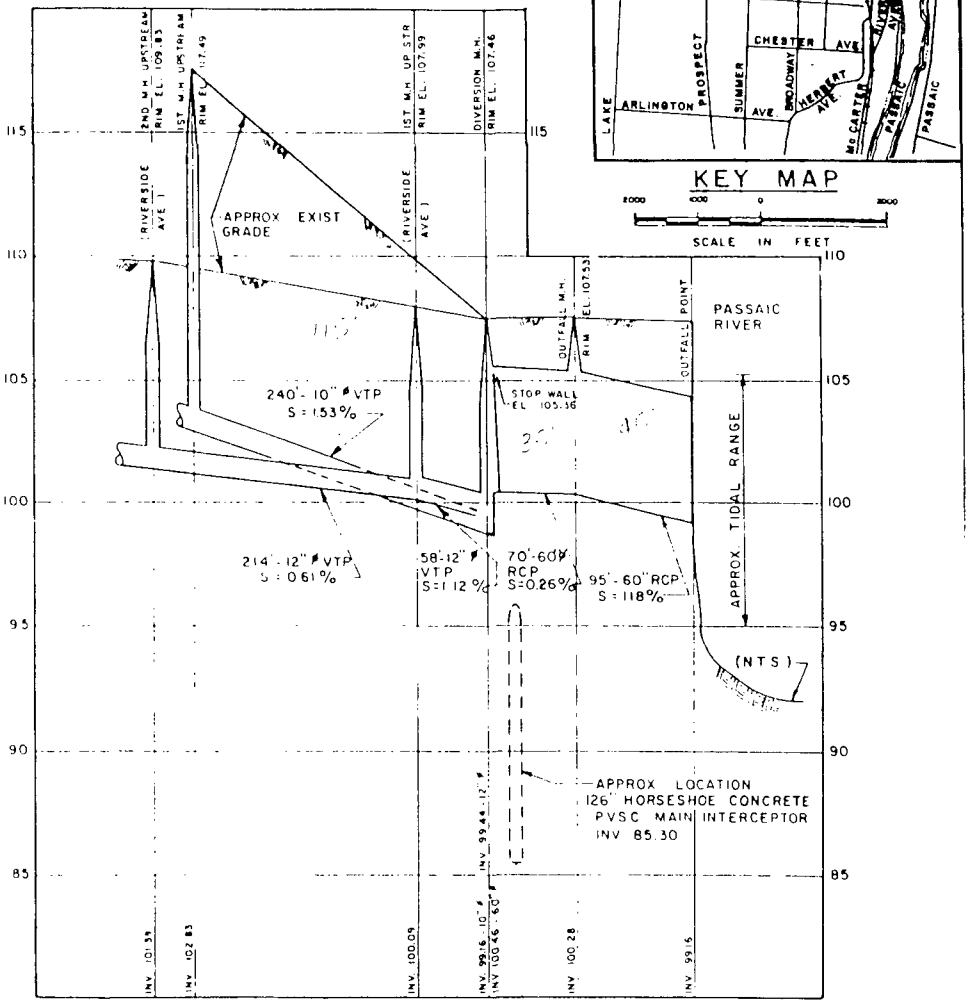


PLAN

SCALE IN FEET

ALL ELEVATIONS BASED ON B.M. NY 1232 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

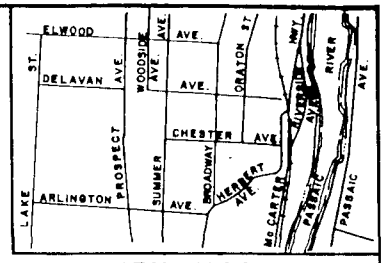
946200020



PROFILE

HORIZ. SCALE IN FEET

VERT. SCALE IN FEET



KEY MAP

SCALE IN FEET

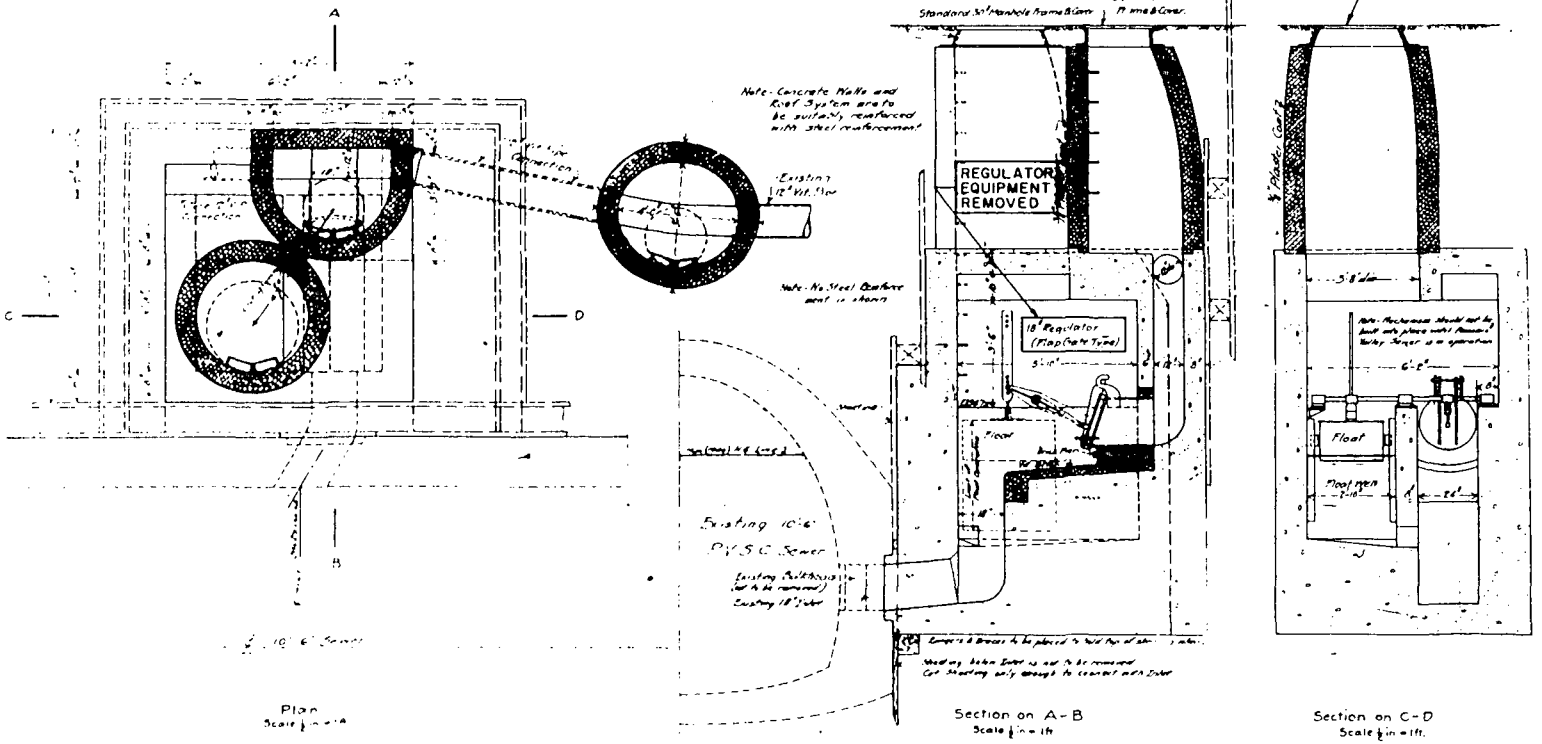
PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER N-002

DELAVAN AVENUE, NEWARK

PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers



Note: This structure was built as shown on this Sheet but not as part of Contract 36

ELEVATIONS BASED ON USGS MON. #1252

State of New Jersey

PASSAIC VALLEY SEWERAGE COMMISSIONERS

MAIN INTERCEPTING SEWER

~~SUGGESTED~~ REGULATING MANHOLE & CONNECTION

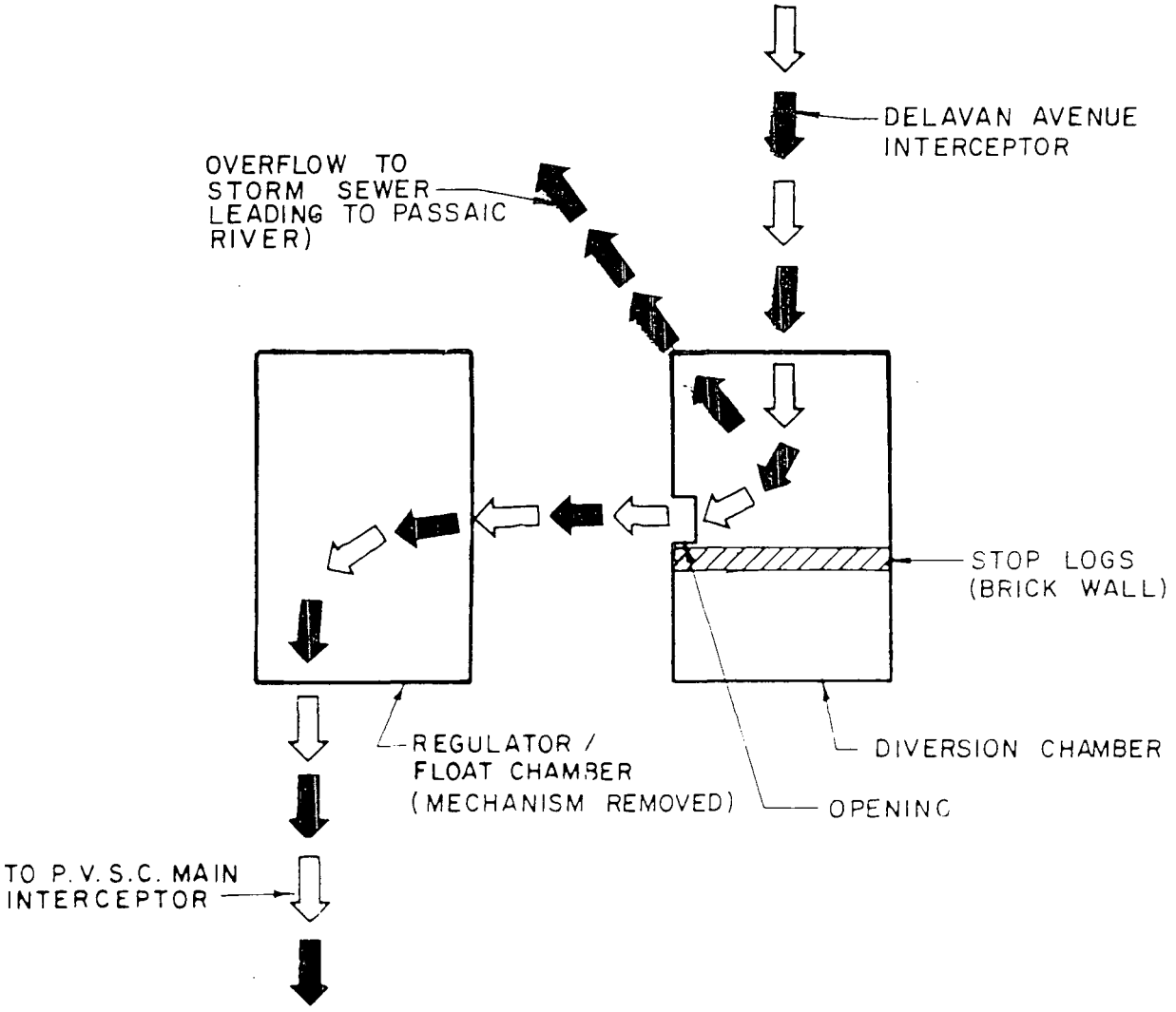
DELEVAN AVE. NEWARK - SECTION 8 (NORTH)

September 10, 1917

Acc. No. 88717

PLATE B

946200021



LEGEND

DRY WEATHER FLOW

STORM FLOW / OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

DELAVAN AVENUE, NEWARK

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

PLATE C

946200022

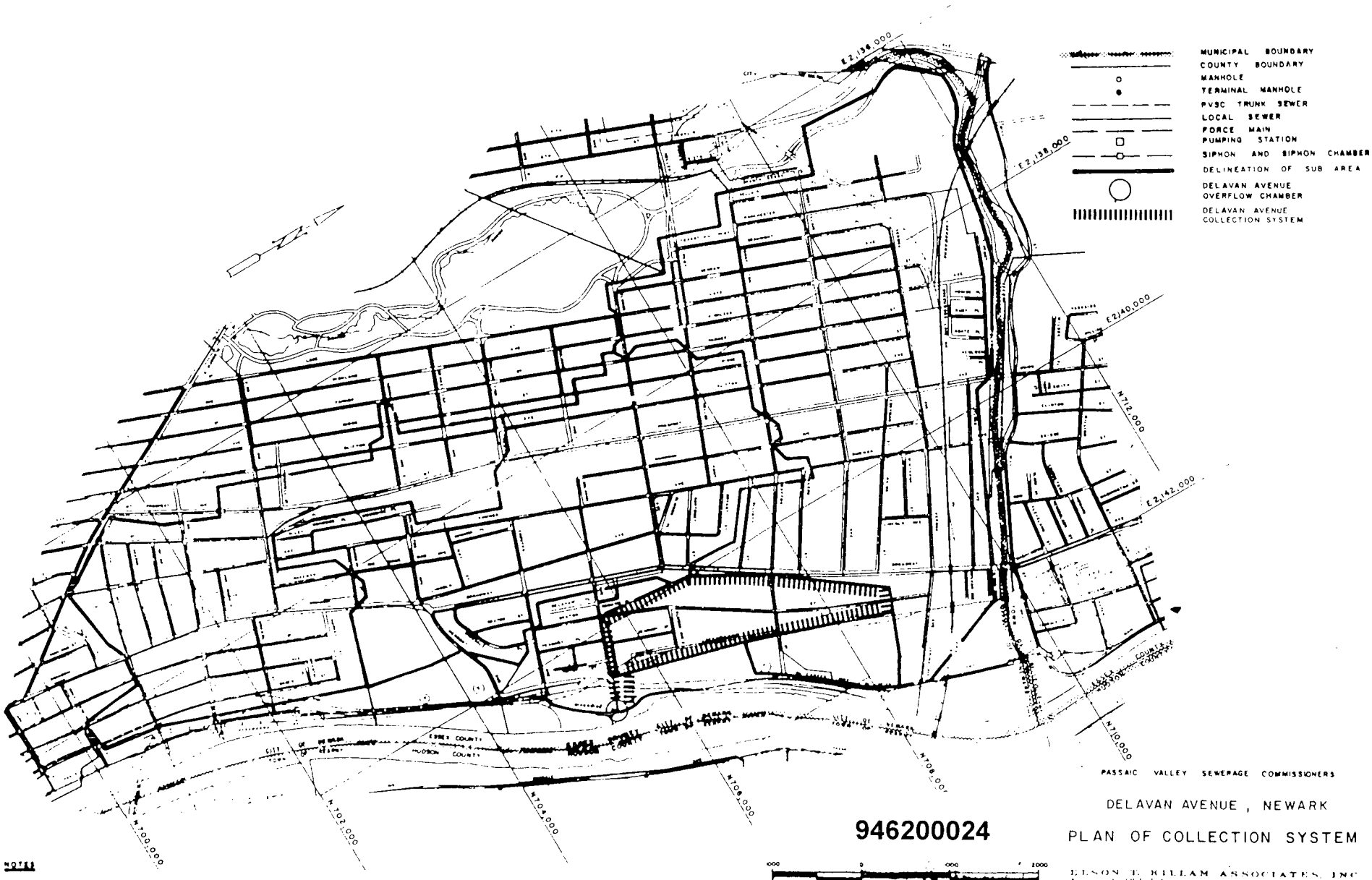
DELAVAN AVENUE OVERFLOW CHAMBER N-002 (Cont'd.)

Condition of Regulator:	appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	no regular stop logs present; overflow access is over top of bricked up masonry dam serving as stop log.
Tide Gate Condition:	none (no tide gate chambers at this location).

Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.137 square miles- 88 acres
Average Daily Flow	
Seasonal Dry Weather:	0.20 MGD
Seasonal Wet Weather:	0.38 MGD
Estimated Combined Flow to Produce an Overflow:	Not estimated; height of brick dam precludes overflow.
Approximate Length of Combined Sewers Serving District:	6,900 linear feet.



946200024

PASSAIC VALLEY SEWERAGE COMMISSIONERS

DELAVAN AVENUE , NEWARK

PLAN OF COLLECTION SYSTEM

LESON E. KILLAM ASSOCIATES, INC.

PLATE D

NOTES

PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS ON 2000 FEET BETWEEN GRIDS.

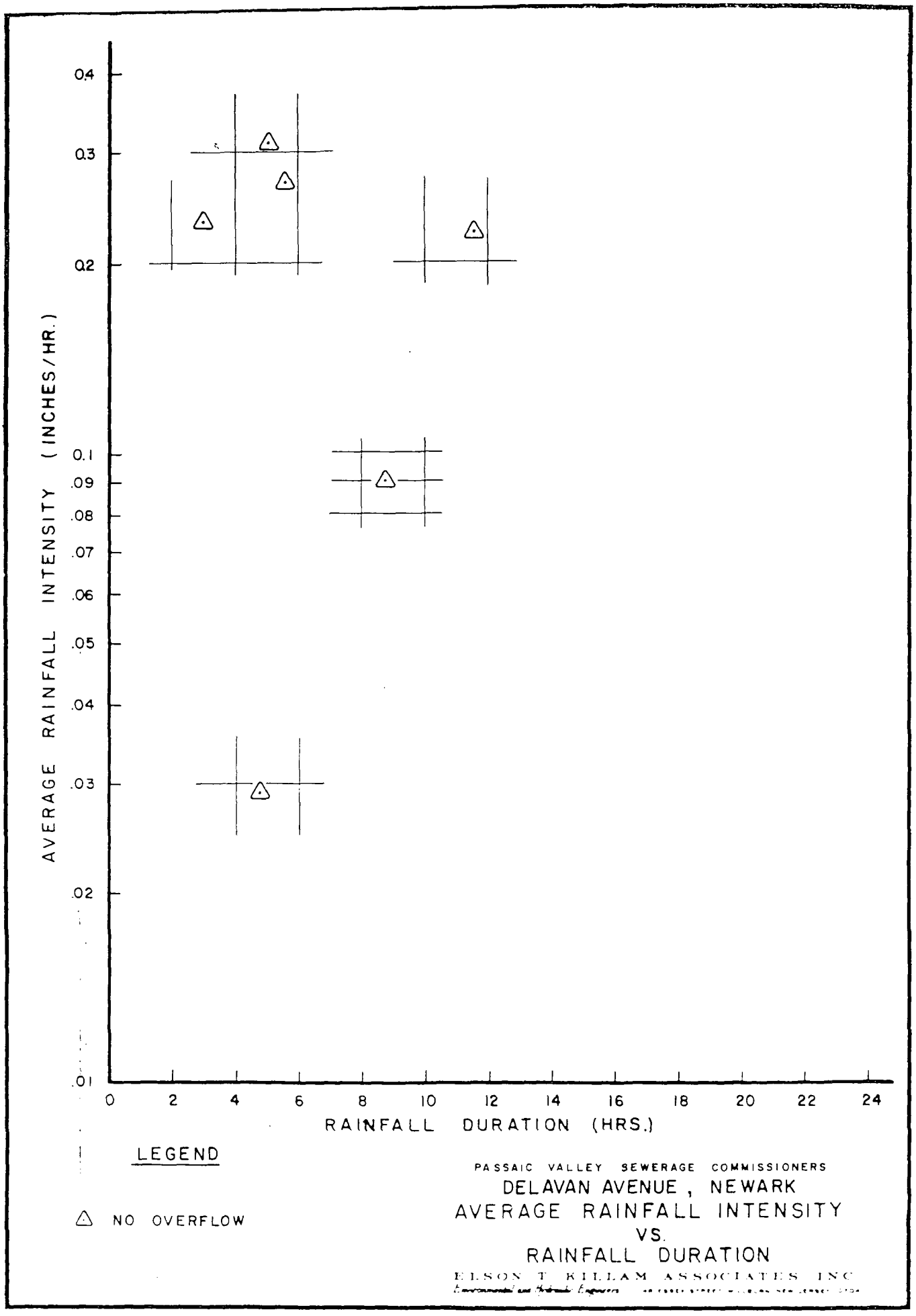


PLATE E

946200025

P.V.S.C Reference # I - 96

Date: 9/24/74

Elston Killam Associates-Infiltration Studies

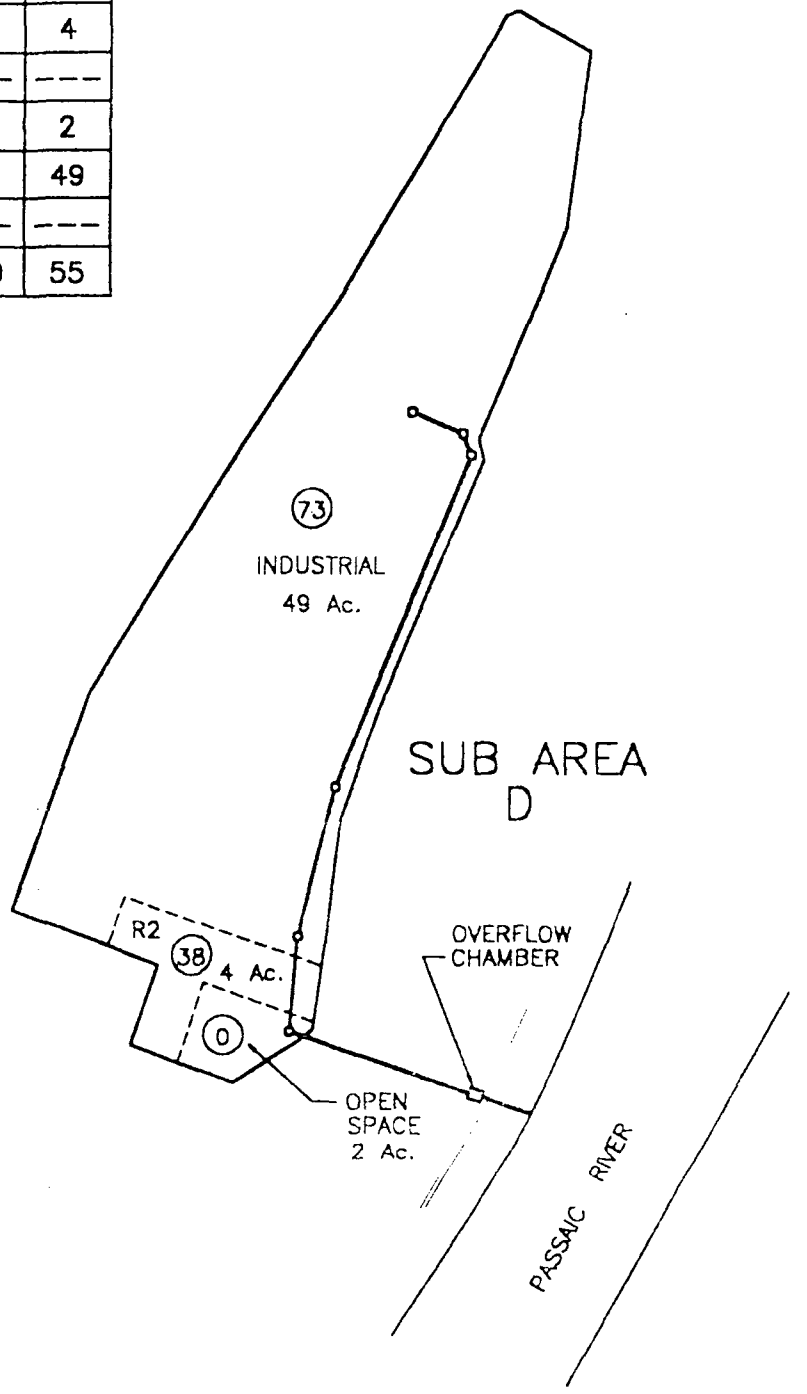
Delavan Ave. First Manhole upstream of regulator. Newark

Baseline

24 samples from 10:25 A.M. 9/23/74 to 10:00 A.M. 9/24/74

Sample #	pH	T.S.S	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C/ C.O.D.	B.O.D.	B.O.D./ C.O.D
1.	7.2	56	56	100.0	196	68	34.7	157	80.1
2.	7.4	16	16	100.0	408	114	27.9	217	53.2
3.	2.0	48	48	100.0	768	232	30.2	207	27.0
4.	1.1	4	4	100.0	348	116	33.3	122	28.5
5.	2.7	224	152	67.9	516	162	31.4	170	32.9
6.	2.8	292	128	43.8	376	94	25.0	78	20.7
7.	6.6	320	120	37.5	332	92	27.7	153	21.7
8.	6.6	68	46	67.6	588	186	31.6	117	19.9
9.	6.7	108	96	88.9	240	58	24.2	88	36.6
10.	7.2	148	56	37.8	120	46	38.3	42	35.0
11.	7.4	128	84	65.6	136	48	35.3	21	15.4
12.	7.5	64	60	93.8	124	44	35.5	41	33.1
13.	3.0	268	84	31.3	108	44	40.7	41	38.0
14.	2.2	20	20	100.0	116	40	34.5	33	28.4
15.	2.8	100	40	40.0	84	28	33.3	50	59.5
16.	3.6	64	48	75.0	52	24	44.4	39	75.0
17.	4.8	104	40	38.5	48	14	29.2	-	-
18.	5.7	108	36	33.3	32	7	21.9	-	-
19.	5.9	36	36	100.0	24	7	29.2	-	-
20.	2.8	8	8	100.0	28	8	35.0	-	-
21.	3.3	8	8	100.0	40	13	32.5	-	-
22.	5.9	32	32	100.0	76	31	40.8	-	-
23.	1.9	40	40	100.0	328	72	22.0	134	39.9
24.	5.0	80	40	100.0	460	129	28.0	217	47.2
							31.9		38.4

LAND USE	%	ACRES
R3	---	---
R2	7	4
R1	---	---
OPEN SPACE	4	2
INDUSTRIAL	89	49
COMMERCIAL	---	---
TOTAL	100	55



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- □ REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
DELEVAN AVENUE OVERFLOW
CITY OF NEWARK

Killam

FIGURE N-002

946200027

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

HERBERT PLACE, NEWARK
N-003

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY 07041

HERBERT PLACE OVERFLOW CHAMBER

The Herbert Place overflow chamber serves a tributary area of approximately 298 acres. This drainage area is served with combined sewers, and the theoretical average daily dry weather flow was determined to be 1.1 MGD. Measurements of the dry weather flow in the collection system indicated that the average daily flow was 1.2 MGD to 1.85 MGD during wet weather months. This indicated an infiltration of approximately 0.1 to 0.7 MGD in the collection system.

Metering facilities were installed in this chamber and were in service from December 31, 1974 through June 29, 1975. During this period of time, 49 rainfall occurrences were observed and 31 overflows occurred, or about 63 percent of the time.

Overflows were found to occur whenever the rainfalls were about 0.05 inches per hour, with durations of 10-12 hours. At this overflow chamber, the volume of overflow was found to range from about 0.1 to 3.0 MGD under automatic overflow conditions. However, this chamber, when manually controlled, resulted in increased overflow which was found to be as high as 4.9 MGD. This overflow chamber is an actively operated and controlled overflow chamber because of the necessity to avoid further surcharge of the interceptor sewer at critical time periods. The time duration of the overflows was not found to be excessive and, in general, was limited to the hours of rainfall when automatic overflow occurred. Likewise, the manual operation to control overflow was found to be for limited time periods, and generally as required to minimize system surcharge.

The peak rates of flow in this overflow chamber were found to be fairly high, approaching 100 MGD on several occasions, with a maximum of 110 MGD.

Sampling during dry weather periods indicated that suspended solids ranged from 134 mg/l to over 300 mg/l; BOD concentrations ranged from 99 mg/l to about 245 mg/l.

The overflow characteristics indicated that the BOD ranged from a low of 17 mg/l to over 200 mg/l. Suspended solids ranged from a low of 38 mg/l to a high of 479 mg/l. It was apparent from the results of the sampling and testing that flushing or self-cleansing action resulting from peak storm flow rates resulted in high pollutional loadings for short time periods.

ELSON T. KILLAM ASSOCIATES, INC.

OVERFLOW DATA EXTRACT

HERBERT PLACE OVERFLOW CHAMBER

NEWARK

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	primarily residential and commercial area
Overflow Location (See Plate A):	in northbound lane of McCarter Highway, just south of Chester Avenue Exit.
District Outlet Sewer (See Plates A and B):	48" circular sewer
Outfall to River (See Plates A and B):	1 - 72" x 48" horseshoe brick sewer and 1 - 51" diameter RCP sewer
Outfall Condition:	Clear of debris and functioning
Tidal Effects:	none observed
Surcharge Effects:	none evident
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.

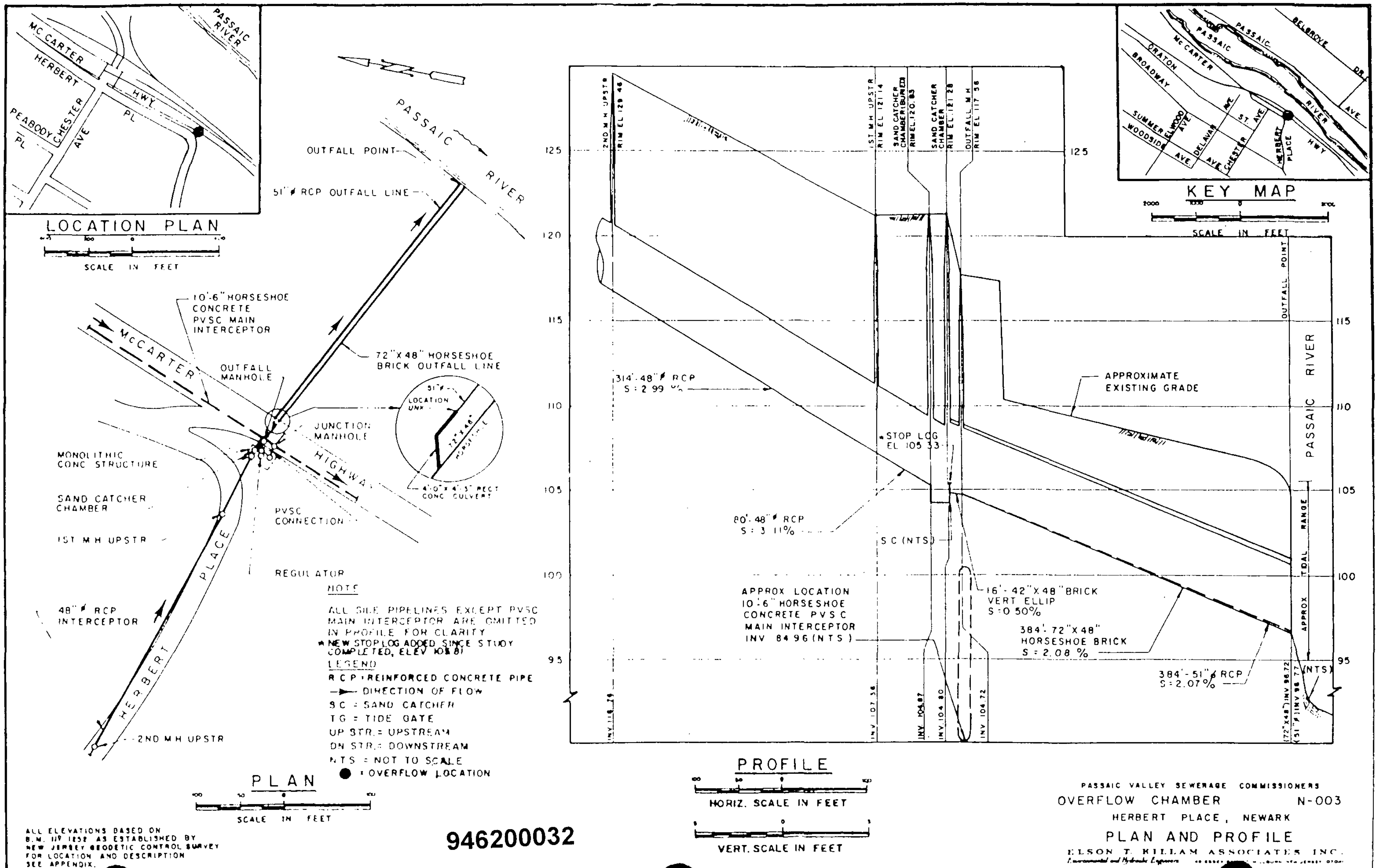
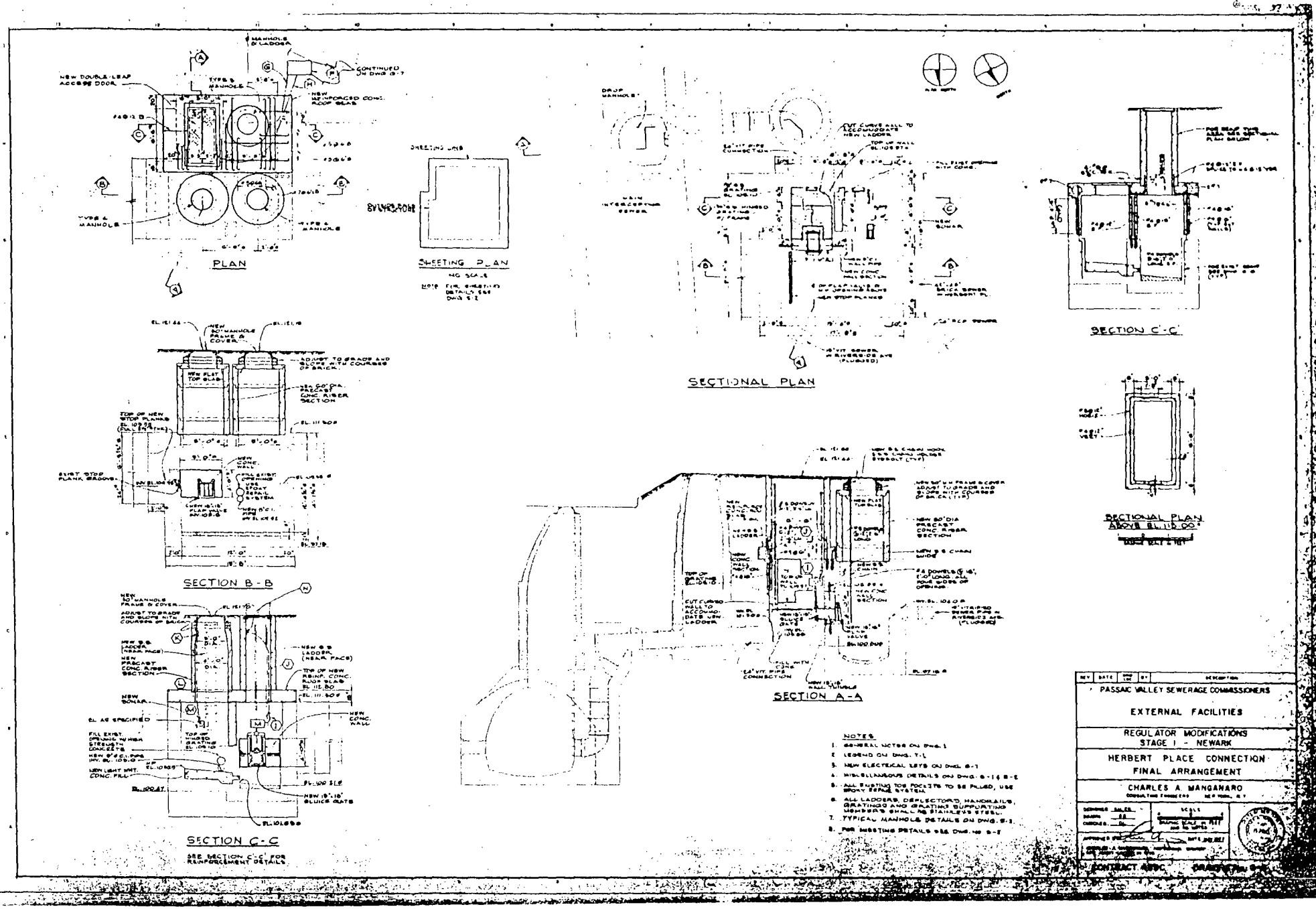
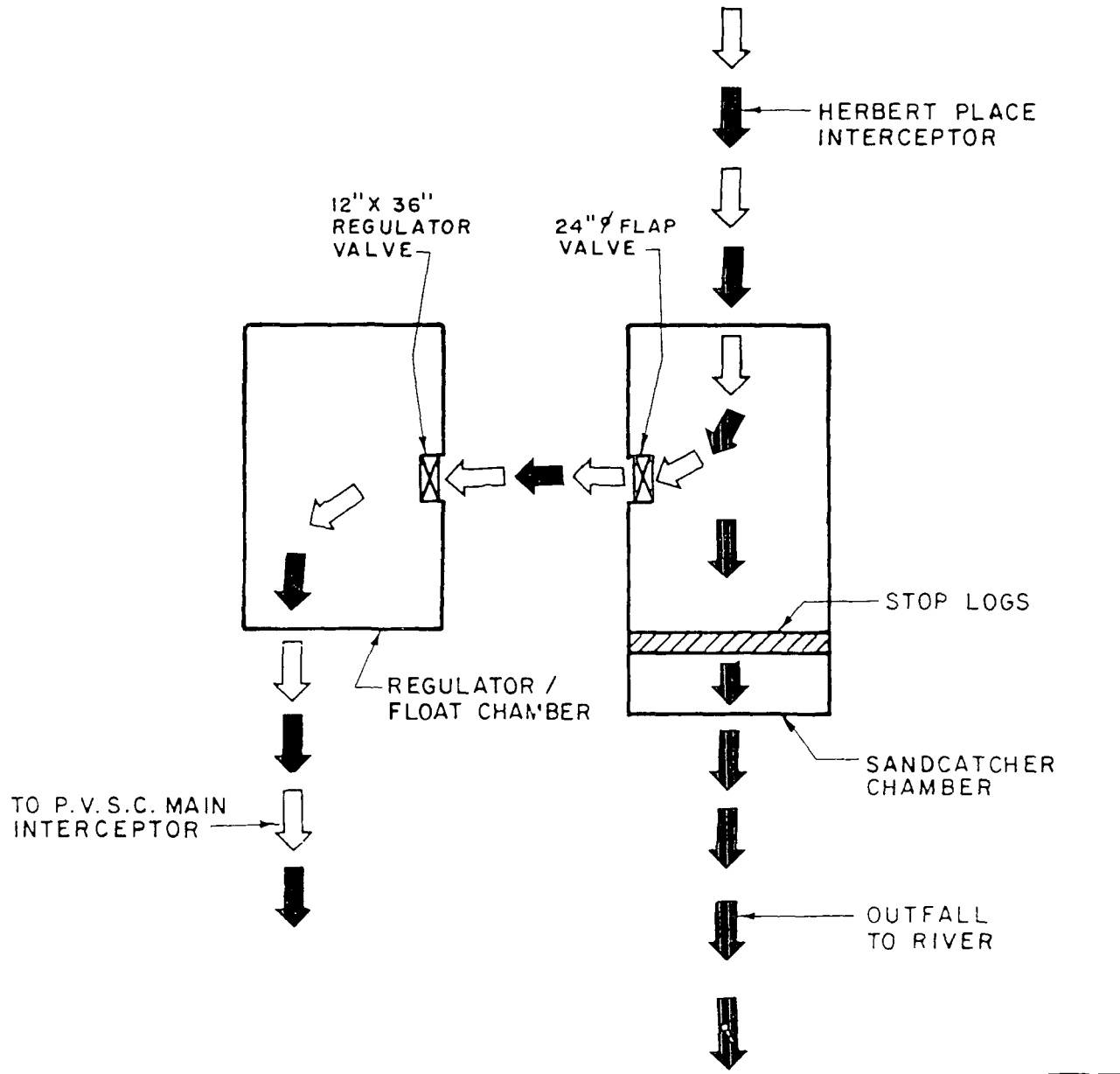

LOCATION PLAN
SCALE IN FEET
MC CARTER
HERBERT
HWY
PL
PEABODY
CHESTER
AVE
PASSAIC RIVER
KEY MAP
SCALE IN FEET
PASSAIC
PASSAIC RIVER
BELGROVE DR
MC CARTER
ORATON
BROADWAY
SUMMER
WOODSIDE
ELWOOD AVE
DELAVAN AVE
CHESTER AVE
ST. AVE
HERBERT PLACE
HWY
PLAN
SCALE IN FEET
PASSAIC RIVER
OUTFALL POINT
51" RCP OUTFALL LINE
72"X48" HORSESHOE BRICK OUTFALL LINE
10'-6" HORSESHOE CONCRETE PVSC MAIN INTERCEPTOR
MCCARTER HIGHWAY
OUTFALL MANHOLE
JUNCTION MANHOLE
MONOLITHIC CONC STRUCTURE
SAND CATCHER CHAMBER
PVSC CONNECTION
1ST M.H UPSTR
REGULATOR
48" RCP INTERCEPTOR
HERBERT PLACE
2ND M.H UPSTR
4'-0" X 4'-3" RECT CONC CULVERT
NOTE
ALL SITE PIPELINES EXCEPT PVSC MAIN INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY
* NEW STOP LOG ADDED SINCE STUDY COMPLETED, ELEV 105.81
LEGEND
R C P = REINFORCED CONCRETE PIPE
DIRECTION OF FLOW
S C = SAND CATCHER
T G = TIDE GATE
UP STR. = UPSTREAM
DN STR. = DOWNSTREAM
N T S = NOT TO SCALE
= OVERFLOW LOCATION
PROFILE
HORIZ. SCALE IN FEET
VERT. SCALE IN FEET
2ND M.H UPSTR RIM EL 129.46
1ST M.H UPSTR RIM EL 121.14
SAND CATCHER CHAMBER (BURIED) RIM EL 120.83
SAND CATCHER CHAMBER RIM EL 121.28
OUTFALL M.H RIM EL 117.56
OUTFALL POINT
125
120
115
110
105
100
95
314'-48" RCP S=2.99 %
* STOP LOG EL 105.33
80'-48" RCP S=3.11%
S C (NTS)
APPROXIMATE EXISTING GRADE
PASSAIC RIVER
APPROX TIDAL RANGE
16'-42"X48" BRICK VERT ELLIP S=0.50%
384'-72"X48" HORSESHOE BRICK S=2.08 %
384'-51" RCP S=2.07 %
APPROX LOCATION 10'-6" HORSESHOE CONCRETE PVSC MAIN INTERCEPTOR INV 84.96 (NTS)
(NTS)
INV 118.29
INV 107.36
INV 104.87
INV 104.80
INV 104.72
(72"X48") INV 96.72
(51") INV 96.77
ALL ELEVATIONS BASED ON B.M. 119.1252 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.
946200032
PASSAIC VALLEY SEWERAGE COMMISSIONERS
OVERFLOW CHAMBER N-003
HERBERT PLACE, NEWARK
PLAN AND PROFILE
ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers

PLATE A



946200033

PLATE B



LEGEND

DRY WEATHER FLOW

STORM FLOW / OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

HERBERT PLACE, NEWARK

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946200034

PLATE C

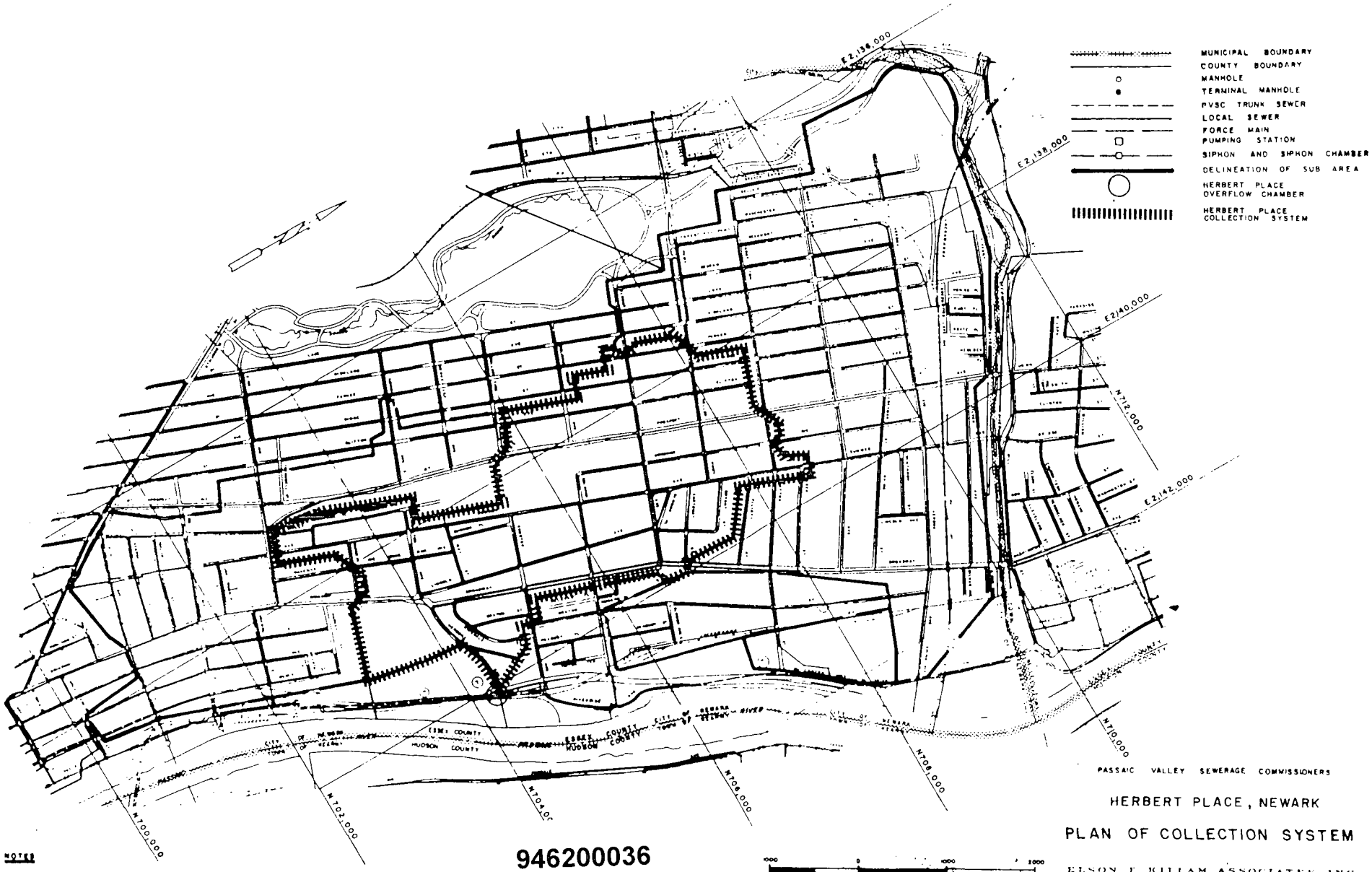
HERBERT PLACE OVERFLOW CHAMBER N-003 (Cont'd)

Condition of Regulator:	appears inoperable
Special Actions Required:	all combined flow diverted to river during rainfall by closing flap gate in sand catcher chamber, whenever heavy combined flows are anticipated.
Overflow Stop Log/Dam Condition:	located beyond sand catcher chamber just before outlet to outfall
Tide Gate Condition:	none (no tide gates at this location)

Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.466 square miles - 298 acres
Average Daily Flow	
Seasonal Dry Weather:	1.20 MGD
Seasonal Wet Weather:	1.85 MGD
Estimated Combined Flow to Produce an Overflow:	11.3 MGD
Approximate Length of Combined Sewers Serving District:	47,000 linear feet



NOTES

PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS DRAWN 2000 FEET BETWEEN GRIDS.

946200036

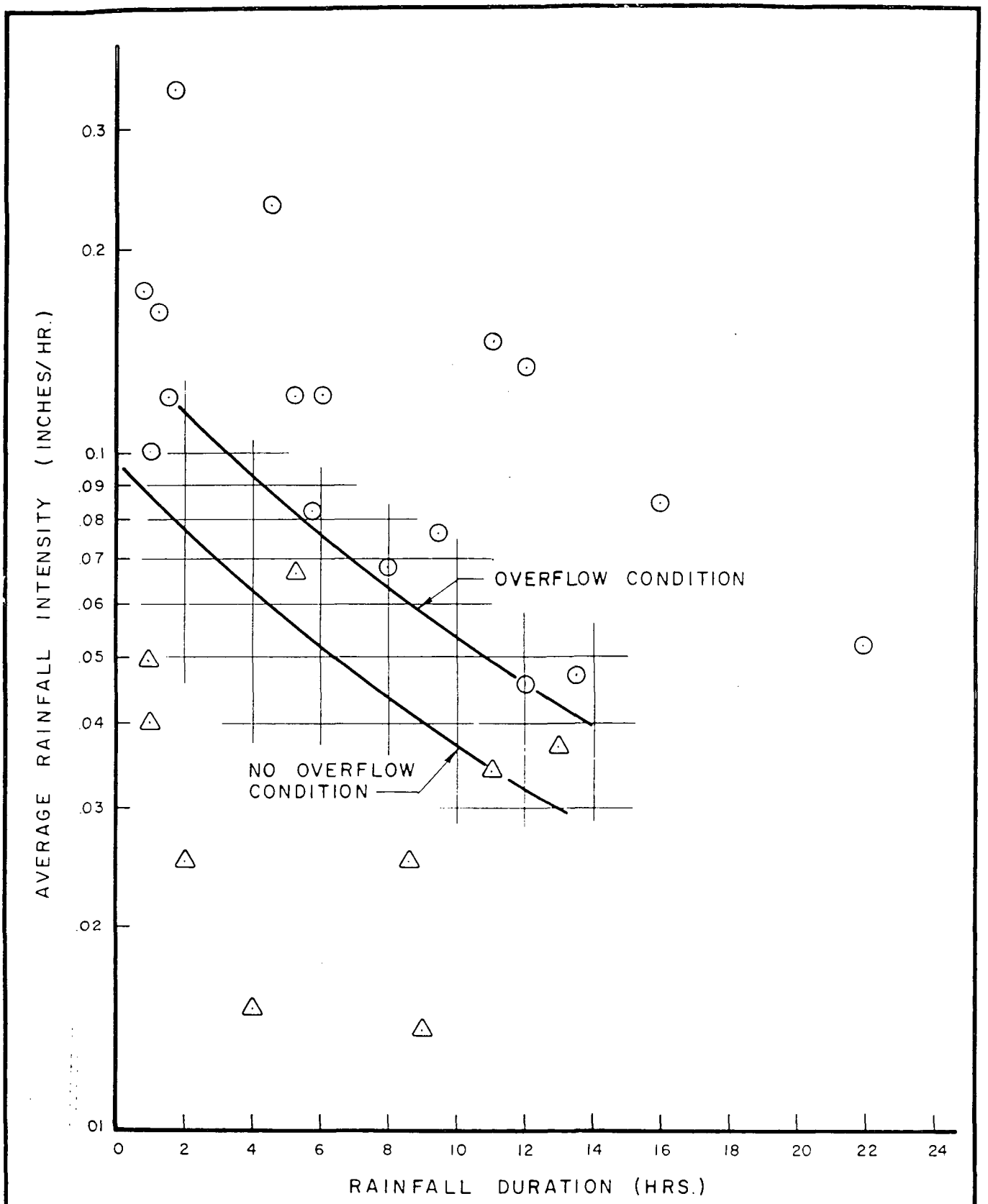
PASSAIC VALLEY SEWERAGE COMMISSIONERS

HERBERT PLACE, NEWARK

PLAN OF COLLECTION SYSTEM

ELSON T. KILLAM ASSOCIATES, INC.

PLATE D



LEGEND

⊙ OVERFLOW

△ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

HERBERT PLACE, NEWARK

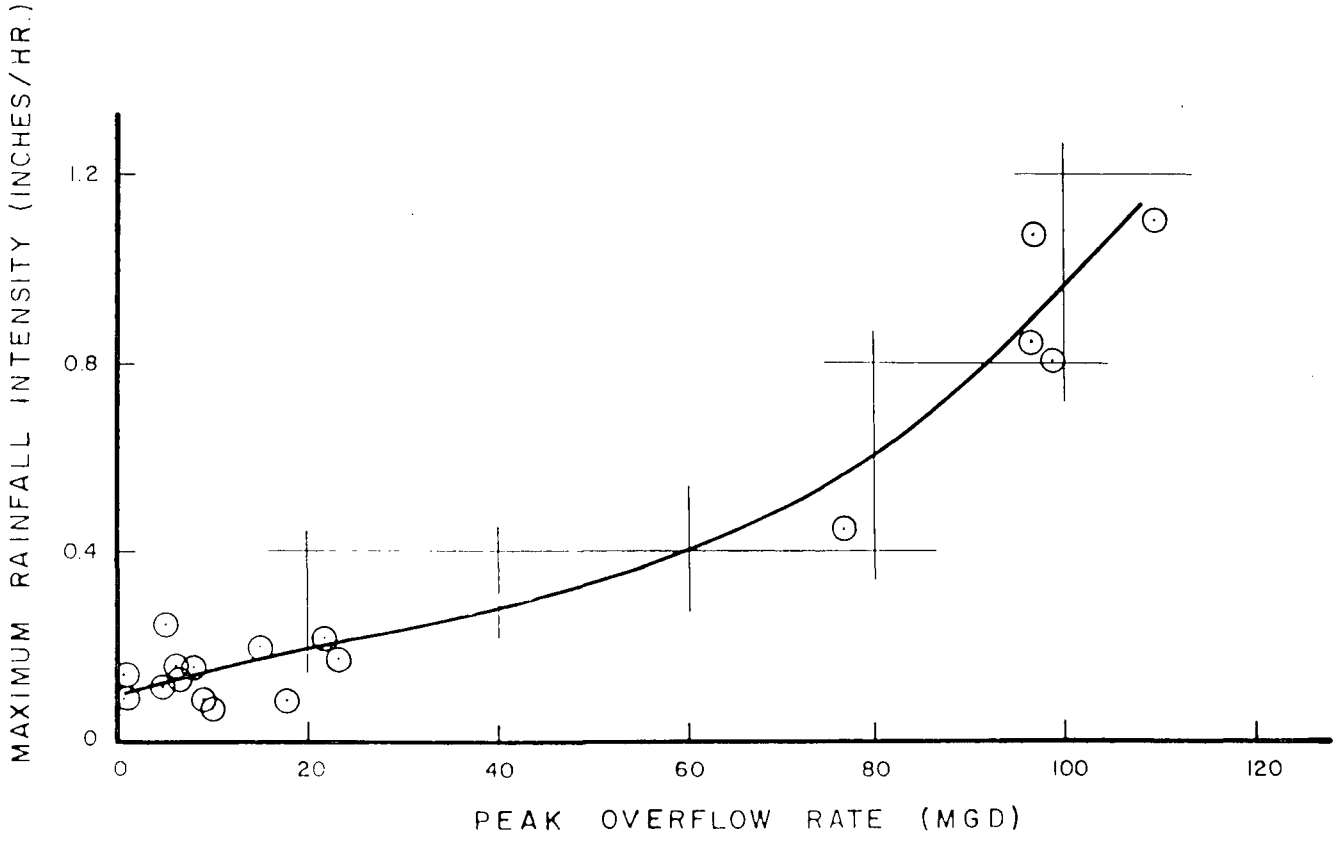
AVERAGE RAINFALL INTENSITY
VS.
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE E

946200037



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

HERBERT PLACE, NEWARK

MAXIMUM RAINFALL INTENSITY
VS.
PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers · 46 ESSEX STREET, MILLBURN, NEW JERSEY 07041

PLATE F

P.V.S.C Reference # J-12 Date: 10/2/74

Elson Killam Associates-Infiltration Studies

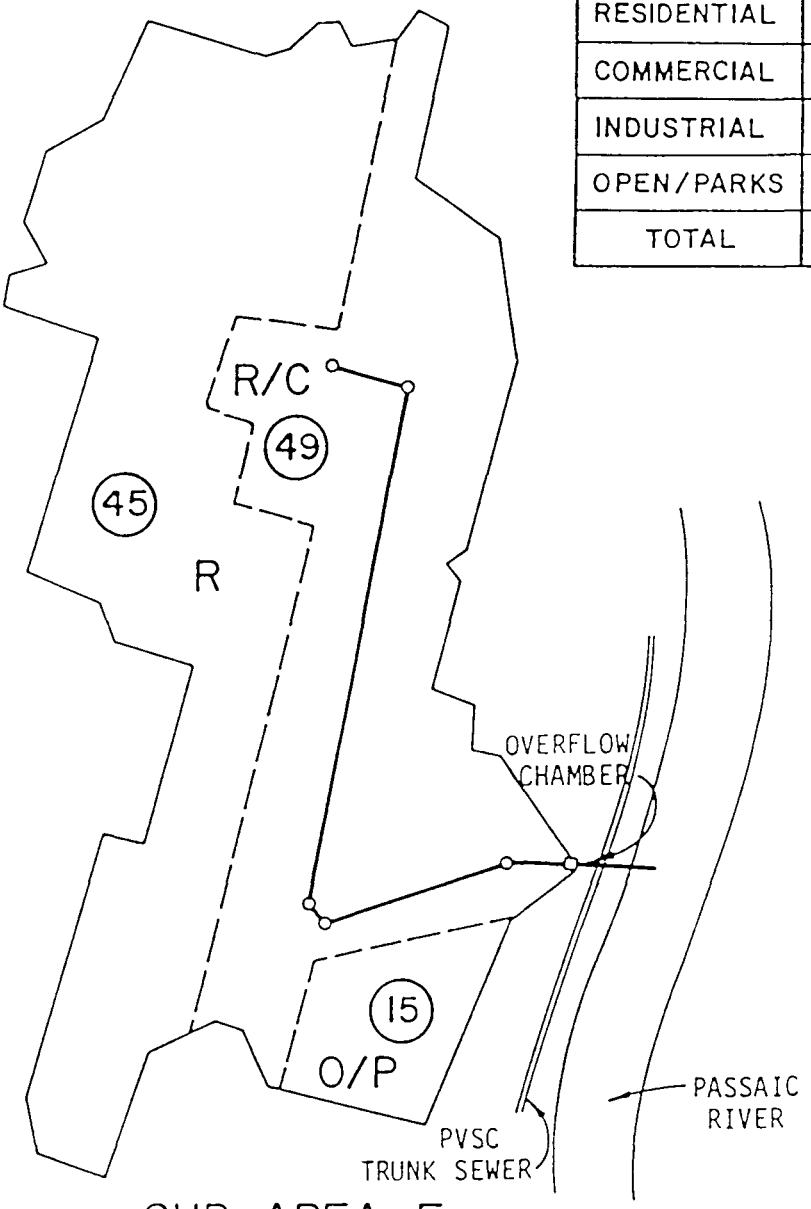
Herbert Place, Newark 10:00 A.M. 10/1/74 to 2:10 A.M. 10/2/74

Baseline

From Manhole upstream from sand catcher

Sample #	pH	T.S.S	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C/ C.O.D.	B.O.D.	B.O.D./ C.O.D
1.	7.3	244	240	98.4	435	108	24.8	245	56.3
2.	7.4	280	278	99.3	482	134	27.8	210	43.6
3.	7.4	246	222	90.2	368	110	29.9	134	36.4
4.	7.5	190	182	95.6	388	120	30.9	134	34.5
5.	7.6	242	220	90.9	384	122	31.8	99	25.8
6.	7.6	222	210	94.6	349	110	31.5	137	39.3
7.	7.6	234	232	99.1	455	108	23.7	179	39.3
8.	7.4	272	264	96.4	416	134	32.2	158	38.0
9.	7.3	260	256	98.5	549	144	26.2	210	38.3
10.	7.4	224	222	99.1	553	126	22.8	165	29.8
11.	7.4	302	268	88.7	571	150	28.8	180	34.5
12.	7.4	222	218	98.2	451	164	36.4	128	28.4
13.	7.5	220	210	95.5	237	100	42.2	143	60.3
14.	7.6	188	188	100.0	290	84	29.0	127	43.8
15.	7.7	186	186	100.0	220	66	30.0	130	59.1
16.	7.7	134	134	100.0	153	44	28.8	0	-
17.		NO	SAMPLE						
18.		"	"						
19.		"	"						
20.		"	"						
21.		"	"						
22.		"	"						
23.		"	"						
24		"	"						
Average		229.1			390.7		29.8	148.7	40.5

LAND USE	%	ACRES
RESIDENTIAL	85	204
COMMERCIAL	9	23
INDUSTRIAL	-	-
OPEN/PARKS	6	14
TOTAL	100	241



SUB AREA E

LEGEND

- MAIN INTERCEPTOR
- R RESIDENTIAL
- C COMMERCIAL
- I INDUSTRIAL
- O/P OPEN/PARK
- SUBCATCHMENT BOUNDARY
- (15) PERCENT IMPERMEABLE AREA WITHIN SUBCATCHMENT
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISSIONERS

NEW JERSEY

COMBINED SEWER OVERFLOW FACILITY PLAN

LAND USE
HERBERT PLACE OVERFLOW
CITY OF NEWARK

Elson T. Killam Associates, Inc.
Environmental and Hydraulic Engineers
27 Bleeker Street Millburn New Jersey 07041

FIGURE N-003

946200040

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

THIRD AVENUE, NEWARK
N-004

1976

ELSON T KILLAM ASSOCIATES INC.
Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY

THIRD AVENUE OVERFLOW CHAMBER

The Third Avenue overflow serves a very small area of only eight acres. The flow in this system is negligible and could not be measured.

Metering facilities were installed within the chamber to determine the extent and duration of any overflow. These facilities were maintained from June 5, 1975 through September 24, 1975. During this period of time, rainfall occurred on at least 17 occasions.

No overflow was observed. This is attributed to the fact that the drainage area is extremely small. The catch basins appeared to be clogged and prevented the entry of large amounts of storm water into the combined sewer system, and most of the runoff in the district is overland with direct discharge into the Passaic River.

Samples taken during the dry weather flow indicated that suspended solids ranged from 144 mg/l up to 650 mg/l, with BOD values ranging from 162 mg/l up to 715 mg/l.

A sample was taken of the flow under storm flow conditions. The BOD was found to average 146 mg/l and the suspended solids to average approximately 150 mg/l. This district is relatively small and the overflow can, in effect, be eliminated.

ELSON T. KILLAM ASSOCIATES, INC.

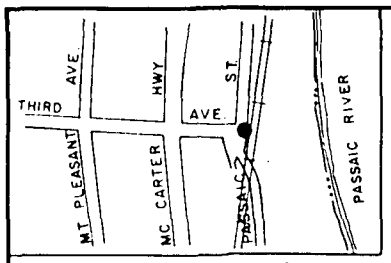
OVERFLOW DATA EXTRACT

THIRD AVENUE OVERFLOW CHAMBER

NEWARK

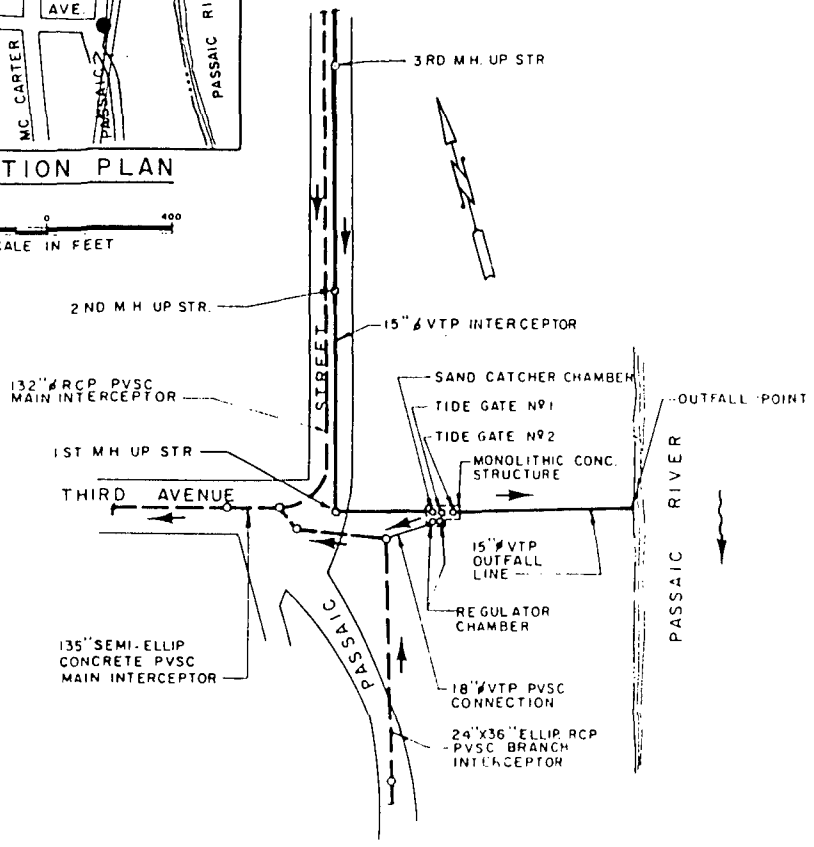
Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	primarily residential
Overflow Location (See Plate A):	in warehouse parking lot east of intersection of Third Avenue and Passaic Street
District Outlet Sewer (See Plates A and B):	15" diameter VTP sewer
Outfall to River (See Plates A and B):	15" diameter VTP sewer
Outfall Condition:	clear, but no overflows noted
Tidal Effects:	none observed
Surcharge Effects:	none evident
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.



LOCATION PLAN

400 200 0 400
SCALE IN FEET



PLAN

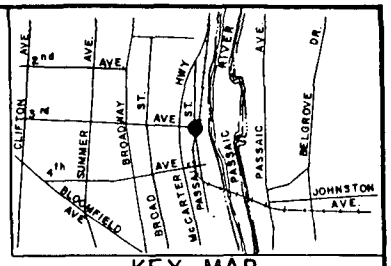
100 50 0 100
SCALE IN FEET

ALL ELEVATIONS BASED ON B.M. Nº 9880A AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX

NOTE:
ALL SIDE PIPELINES EXCEPT PVSC MAIN INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.

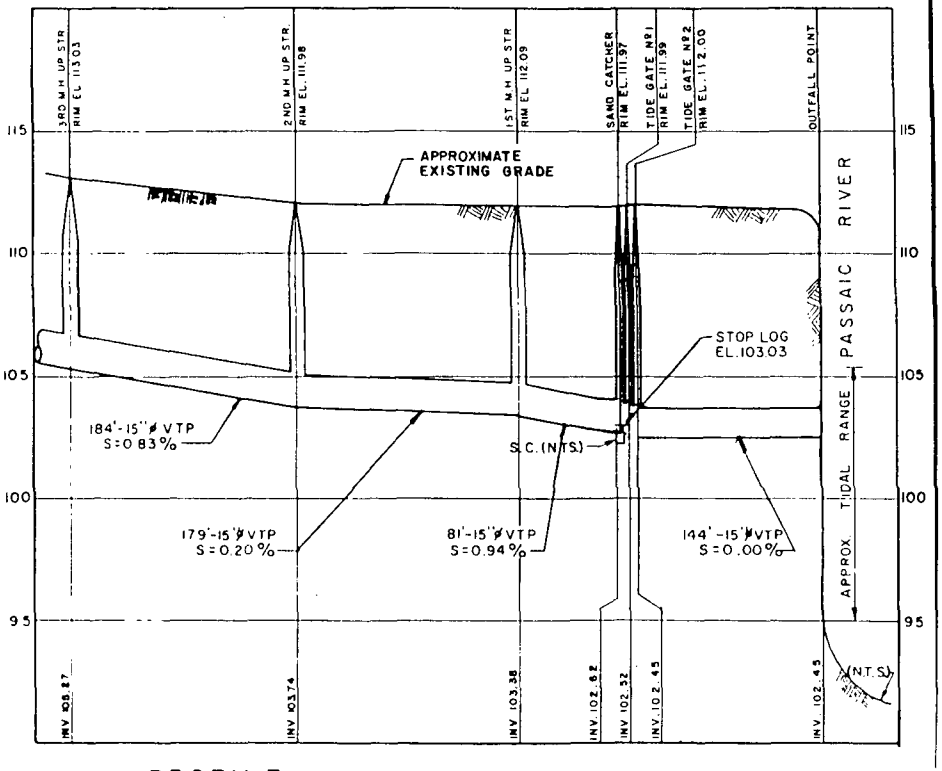
LEGEND:

→ DIRECTION OF FLOW
S.C. = SAND CATCHER
T.G. = TIDE GATE
UP STR. = UP STREAM
DN. STR. = DOWN STREAM
N.T.S. = NOT TO SCALE
V.T.P. = VITRIFIED TILE PIPE
R.C.P. = REINFORCED CONCRETE PIPE
● = OVERFLOW LOCATION



KEY MAP

2000 1000 0 2000
SCALE IN FEET



PROFILE

100 50 0 100
HORIZ. SCALE IN FEET

8 0 8
VERT. SCALE IN FEET

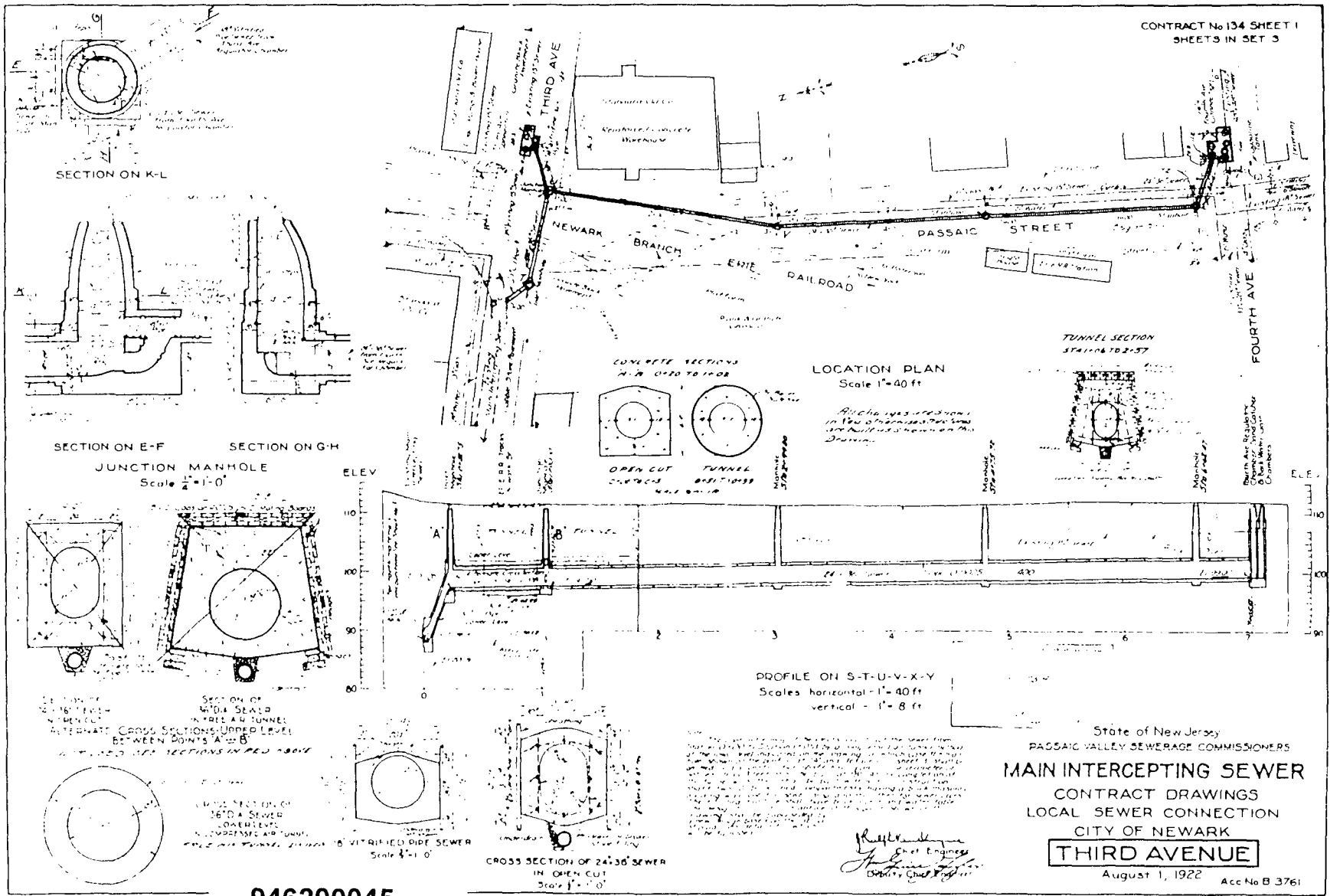
946200044

PASSAIC VALLEY SEWERAGE COMMISSIONERS
OVERFLOW CHAMBER N-004
THIRD AVENUE, NEWARK

PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES INC.
Environmental and Hydraulic Engineers

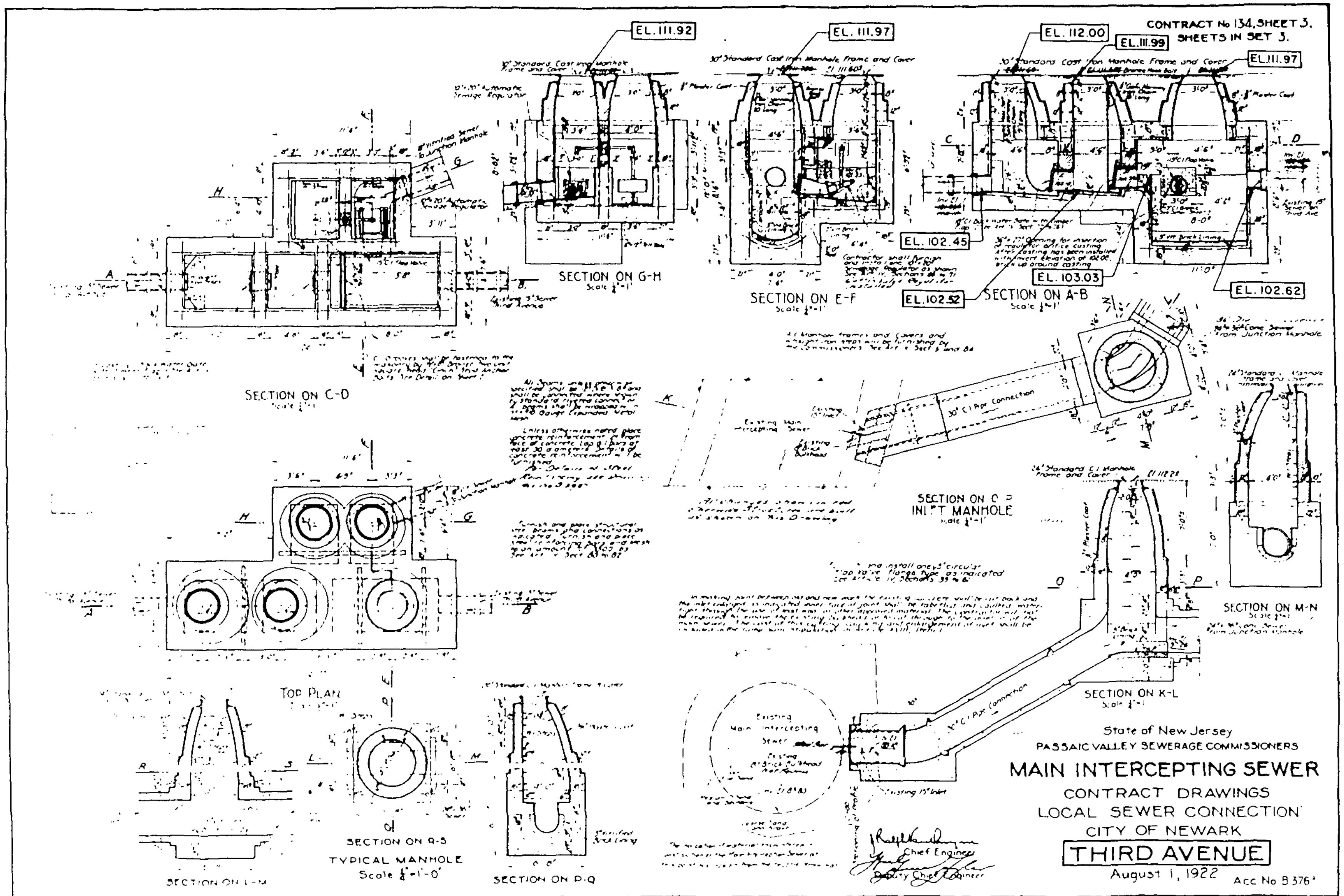
PLATE A



946200045

SHEET 1 OF 2 PLATE B

(3A)



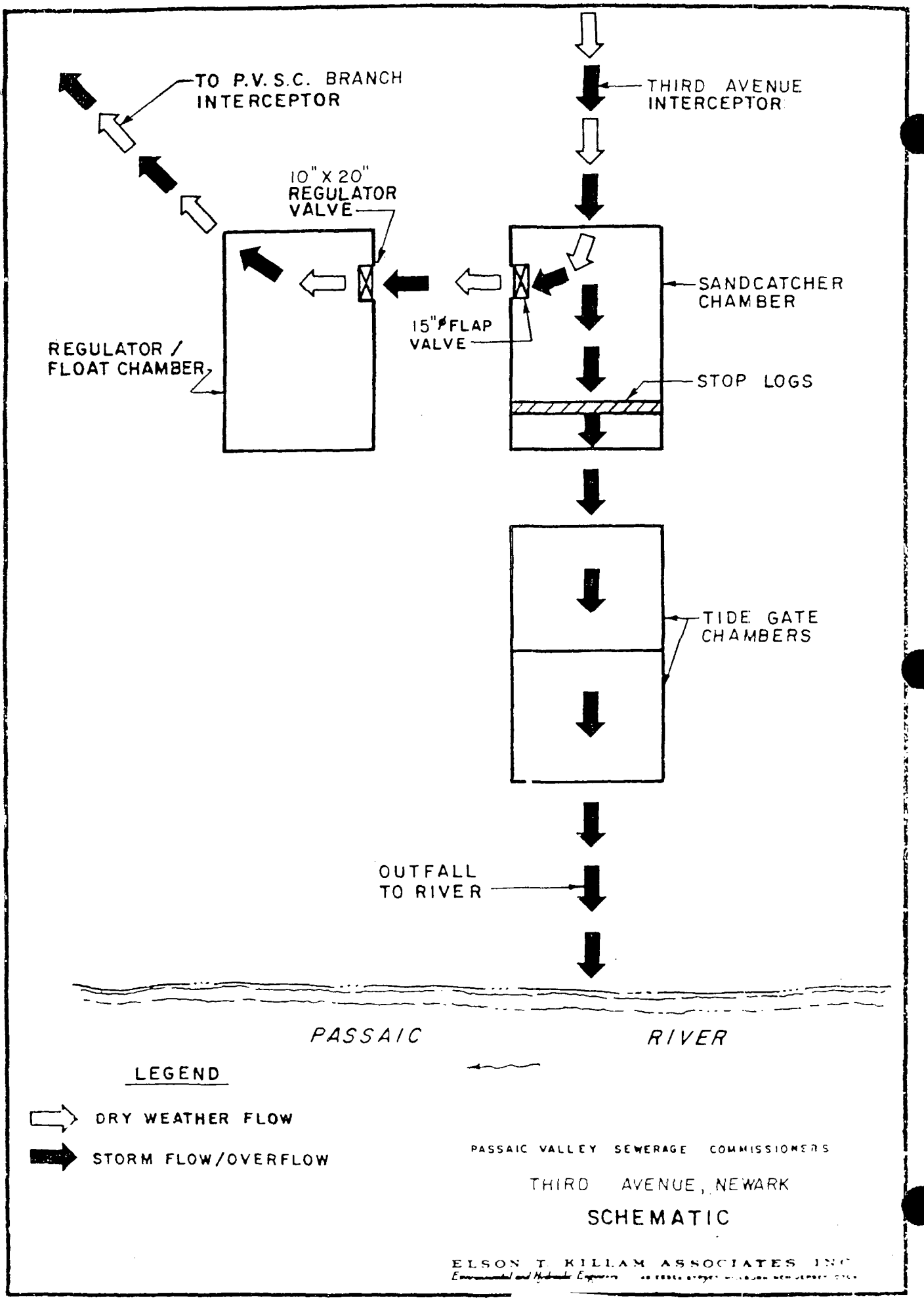
(3B)

ELEVATIONS BASED ON USGS MON #9660A

SHEET 2 OF 2

PLATE B

946200046



946200047

PLATE C

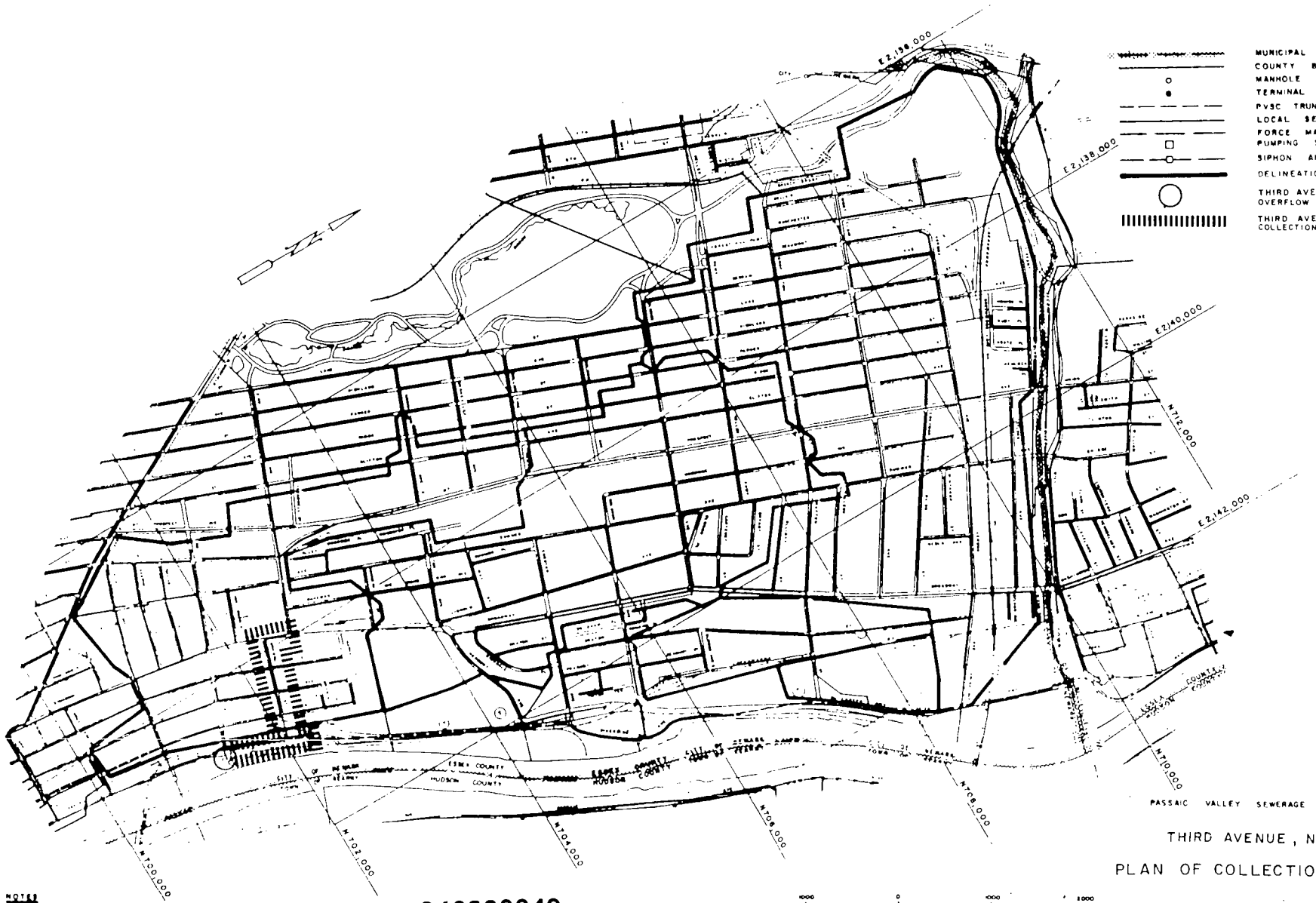
THIRD AVENUE OVERFLOW CHAMBER N-004 (Cont'd.)

Condition of Regulator:	appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	stop logs located in sand catcher at portal to first tide gate chamber
Tide Gate Condition:	both gates operable

Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.013 square miles-8 acres
Average Daily Flow	
Seasonal Dry Weather:	negligible
Seasonal Wet Weather:	negligible
Estimated Combined Flow to Produce an Overflow:	not estimated; no overflow observed
Approximate Length of Combined Sewers Serving District:	1,950 linear feet



PASSAIC VALLEY SEWERAGE COMMISSIONERS

THIRD AVENUE, NEWARK

PLAN OF COLLECTION SYSTEM

NOTES

PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS DRAWN 2000 FEET BETWEEN GRIDS.

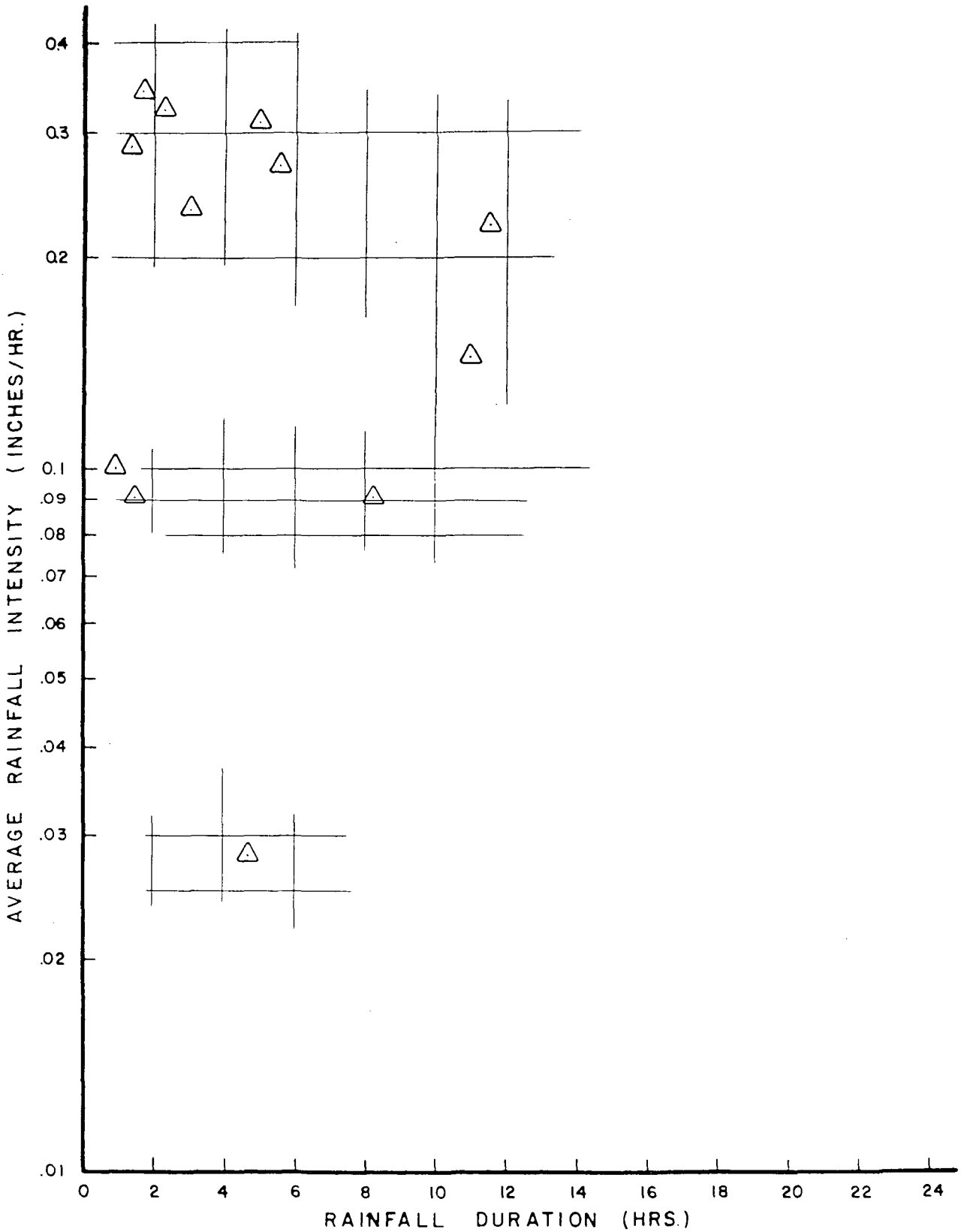
946200049

1000 0 2000 4000

SCALE IN FEET

ELSON T. KILLAM ASSOCIATES, INC.

PLATE D



LEGEND

△ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

THIRD AVENUE, NEWARK

AVERAGE RAINFALL INTENSITY

VS.

RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE E

946200050

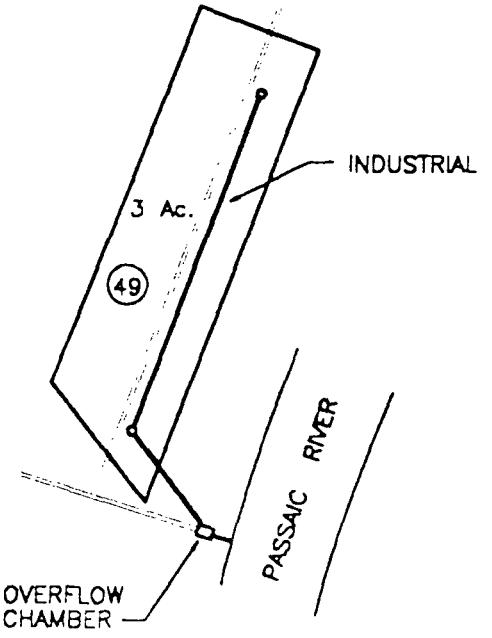
PVSC Reference # B-41 Date: 2/13/75

Elson T. Killam Associates - Infiltration Studies Sampler #401-Set # 41
Third Avenue, Newark, In sandcatcher
1530-2/11/75 to 1105-2/12/75 O.F.# 03;/N-004

Third Avenue, Newark- In Sandcatcher
19 Samples Baseline

SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC/COD	BOD	BOD/COD
1	7.3	370	294	79.5	594	144	24.3	370	62.3
2	7.3	220	168	76.5	735	120	16.3	297	40.4
3	7.7	386	300	77.8	521	136	26.1	293	56.2
4	7.5	318	278	87.5	602	184	30.6	320	53.2
5	7.6	218	190	87.3	703	176	25.0	427	60.8
6	7.7	242	216	89.3	634	136	21.5	362	57.2
7	8.0	144	114	79.2	533	168	31.5	333	62.5
8	8.0	236	162	68.7	683	160	23.4	303	44.4
9	7.9	196	128	65.3	586	120	20.5	270	46.1
10	7.9	188	124	66.0	489	176	36.0	338	69.1
11	7.7	274	194	70.8	663	144	21.7	447	67.3
12	7.7	342	246	72.0	852	170	20.0	715	83.8
13	7.4	250	170	68.0	598	136	22.7	210	35.2
14	7.7	266	166	62.4	596	144	24.2	338	56.7
15	7.5	216	150	69.4	533	152	28.5	325	61.0
16	7.5	500	400	80.0	687	120	17.5	383	55.8
17	7.4	652	328	50.3	586	96	16.4	315	53.8
18	7.5	240	164	68.3	230	56	24.3	186	80.9
19	7.5	254	176	69.3	368	56	15.2	162	44.1
							23.4		57.4

LAND USE	%	ACRES
R3	---	---
R2	---	---
R1	---	---
OPEN SPACE	---	---
INDUSTRIAL	100	3
COMMERCIAL	---	---
TOTAL	100	3



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
THIRD AVENUE OVERFLOW
CITY OF NEWARK

Killam
Associates & Consulting Engineers

FIGURE N-004

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

FOURTH AVENUE, NEWARK
N-005

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY 07041

FOURTH AVENUE OVERFLOW CHAMBER

The Fourth Avenue overflow serves a tributary area of approximately 225 acres, all of which contain combined sewers. The theoretical dry weather flow in this tributary area was determined to be approximately 1.0 MGD. The metered dry weather flow was found to be 1.60 to 1.95 MGD during the dry weather months and wet weather months, respectively. Therefore, the infiltration in this tributary area ranges from about 0.6 to 0.9 MGD.

Measurements were made at this overflow chamber beginning on December 31, 1974, and extending through July 31, 1975. During this period of time, rainfall was measured on 56 occasions. Overflow was determined to have occurred approximately 46 times. Overflow was found to occur with rainfall intensities of approximately 0.05 to 0.07 inches per hour.

An examination of the records of rainfall indicates that the overflow ranged from 0.1 to 4.7 million gallons during the period of observation, where peak overflow rates were found to be as high as 62 MGD.

It is estimated that overflows will occur from 55 to 70 times at this chamber, based upon rainfall occurrences ranging from 70 to 90 times yearly.

This overflow chamber is an actively operated and controlled overflow chamber because of the necessity to avoid further surcharge of the interceptor sewer at critical time periods. The time duration of the overflows was not found to be excessive and, in general, was limited to the hours of rainfall when automatic overflow occurred. Likewise, the manual operation to control overflow was found to be for limited time periods, and generally as required to minimize system surcharge.

Samples of the sewage taken during the dry weather periods indicated that suspended solids ranged from less than 10 mg/l to about 80 mg/l, while BOD concentrations ranged from 17 mg/l to 282 mg/l.

Collected samples of the overflow indicated the following wastewater characteristics: BOD values ranged from 22 to 150 mg/l; TSS values ranged from 150 to 273 mg/l. This collection area is primarily residential in nature.

ELSON T. KILLAM ASSOCIATES, INC.

OVERFLOW DATA EXTRACT

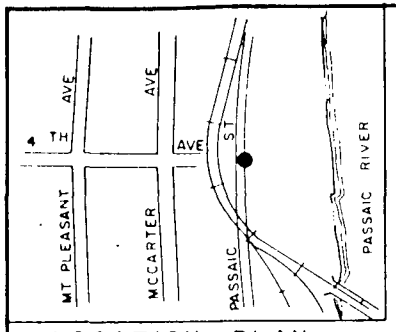
FOURTH AVENUE OVERFLOW CHAMBER

NEWARK

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	primarily residential, with some industrial flow (12 percent) contribution
Overflow Location (See Plate A):	in northeast portion of intersection of Fourth Avenue and Passaic Street
District Outlet Sewer (See Plates A and B):	42" diameter brick sewer
Outfall to River (See Plates A and B):	48" x 48" brick sewer
Outfall Condition:	clear of debris and functioning
Tidal Effects:	none
Surcharge Effects:	surcharge observed due to capacity limitations*
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.

* and/or tide gate closure during high tides.

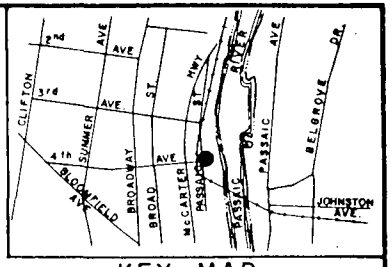


LOCATION PLAN

400 800 0 400
SCALE IN FEET

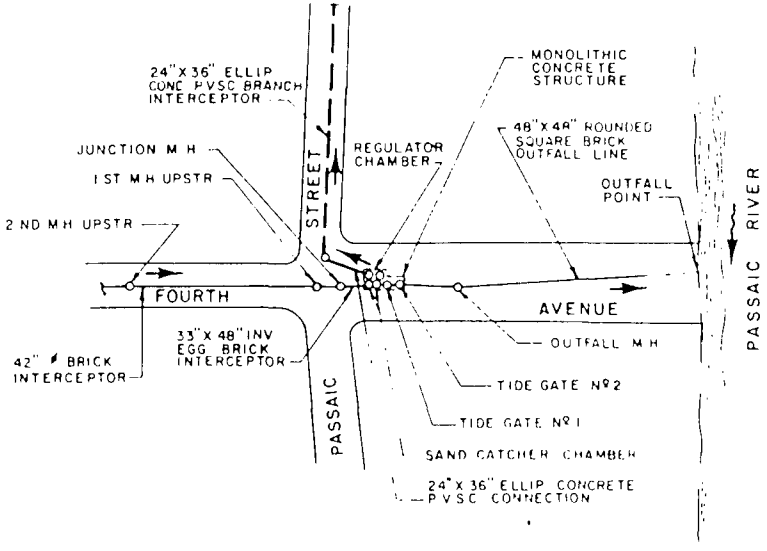
NOTE
ALL SIDE PIPELINES EXCEPT PVSC BRANCH INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY

LEGEND
→ DIRECTION OF FLOW
S C = SAND CATCHER
T G = TIDE GATE
UP STR = UP STREAM
DN STR = DOWN STREAM
N T S = NOT TO SCALE
● = OVERFLOW LOCATION



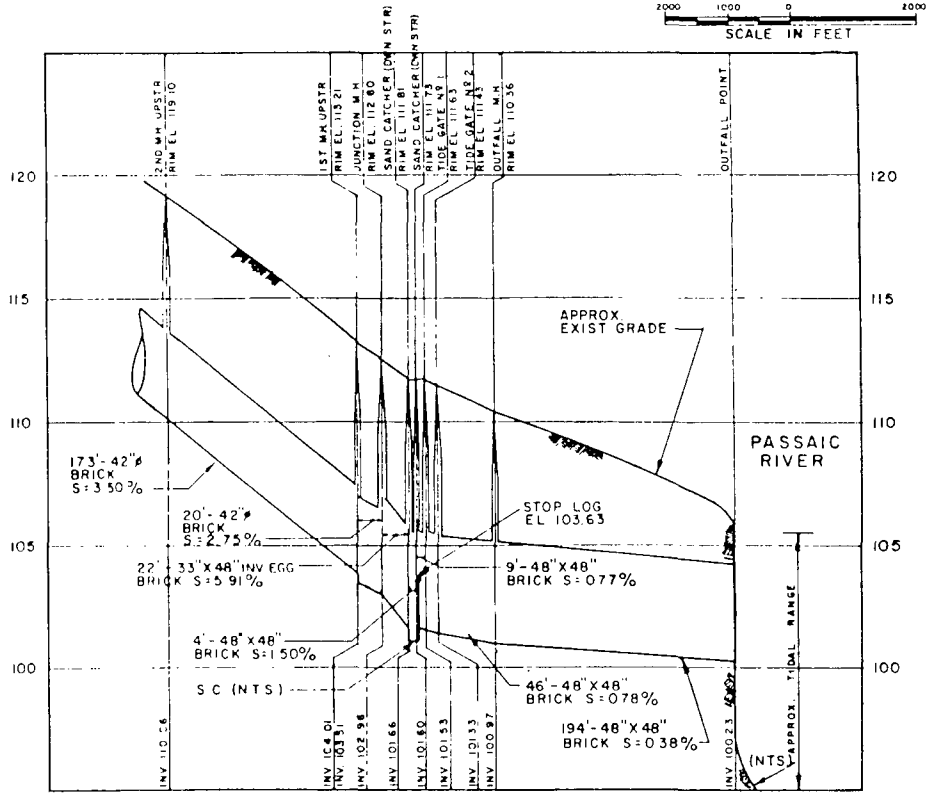
KEY MAP

2000 1000 0 2000
SCALE IN FEET



PLAN

100 50 0 100
SCALE IN FEET



PROFILE

100 50 0 100
HORIZ SCALE IN FEET
5 0 5
VERT SCALE IN FEET

ALL ELEVATIONS BASED ON B.M. Nº 88604 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

946200057

PASSAIC VALLEY SEWERAGE COMMISSIONERS
OVERFLOW CHAMBER N-005
FOURTH AVENUE, NEWARK
PLAN AND PROFILE
ELSON T KILLAM ASSOCIATES INC.
Environmental and Hydraulic Engineers

PLATE A

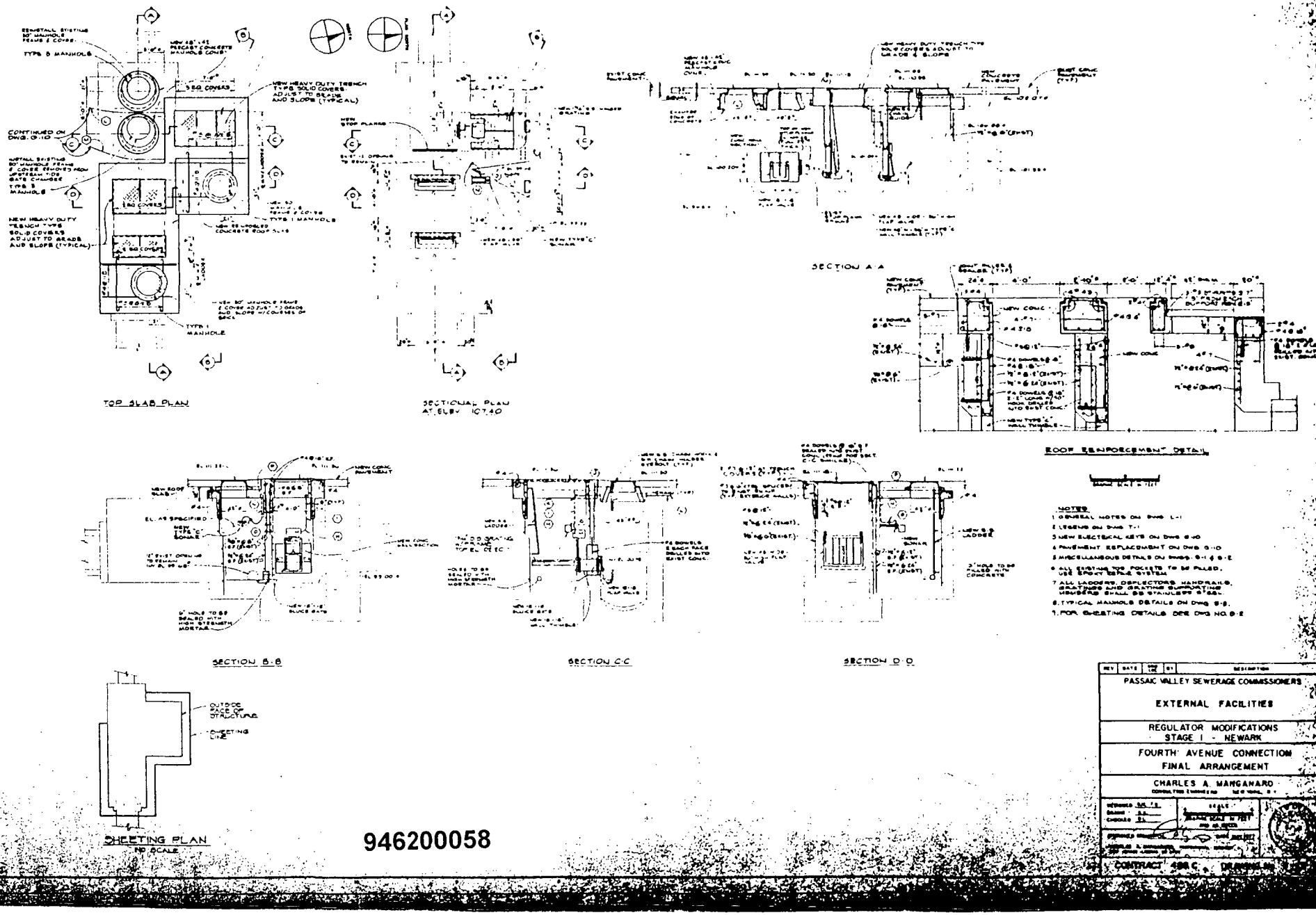
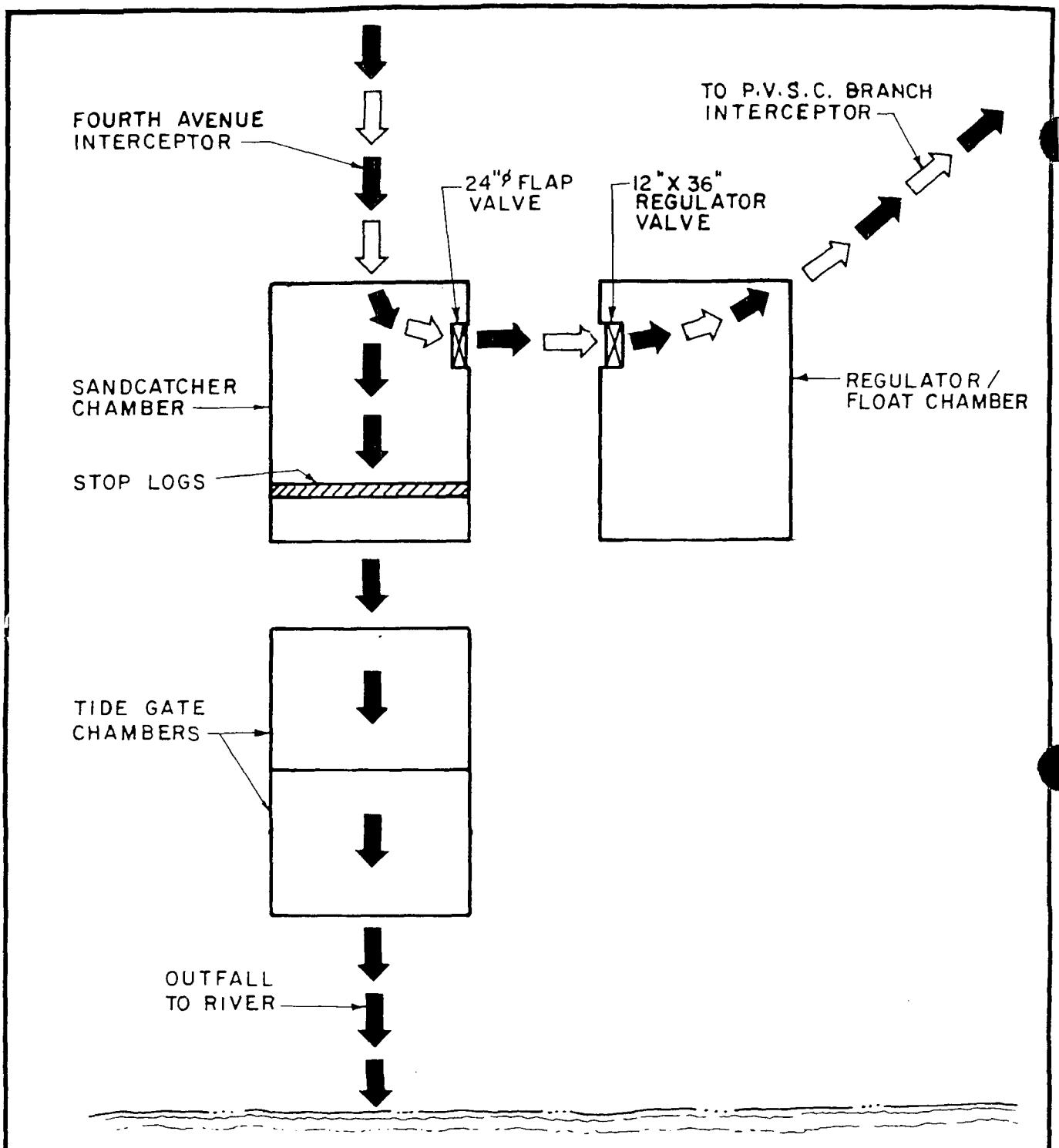

TOP SLAB PLAN
SECTIONAL PLAN
SECTION A-A
ROOF REINFORCEMENT DETAIL
SECTION B-B
SECTION C-C
SECTION D-D
SHEETING PLAN
NO SCALE
946200058
PASSAIC VALLEY SEWERAGE COMMISSIONERS
EXTERNAL FACILITIES
REGULATOR MODIFICATIONS
STAGE I - NEWARK
FOURTH AVENUE CONNECTION
FINAL ARRANGEMENT
CHARLES A. MANGANARO

PLATE B



PASSAIC VALLEY SEWERAGE COMMISSIONERS

FOURTH AVENUE, NEWARK

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers

FOURTH AVENUE OVERFLOW N-005 (Cont'd)

Condition of Regulator:	appears inoperable
Special Actions Required:	all combined flow diverted to river during rainfall by closing flap gate in sand catcher chamber whenever heavy combined flows are experienced.
Overflow Stop Log/Dam Condition:	stop log located at downstream end of sand catcher at opening to first tide gate chamber.
Tide Gate Condition:	Tide Gate No. 1 leaking and Tide Gate No. 2 missing.
Note:	During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.352 square miles - 225 acres
Average Daily Flow	
Seasonal Dry Weather:	1.60 MGD
Seasonal Wet Weather:	1.95 MGD
Estimated Combined Flow to Produce an Overflow:	16.5 MGD
Approximate Length of Combined Sewers Serving District:	30,200 linear feet

NOTES

PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS DRAWN 2000 FEET BETWEEN GRIDS.

946200061

PASSAIC VALLEY SEWERAGE COMMISSIONERS

FOURTH AVENUE, NEWARK

PLAN OF COLLECTION SYSTEM

ELSON T. KILLAM ASSOCIATES, INC.

PLATE D

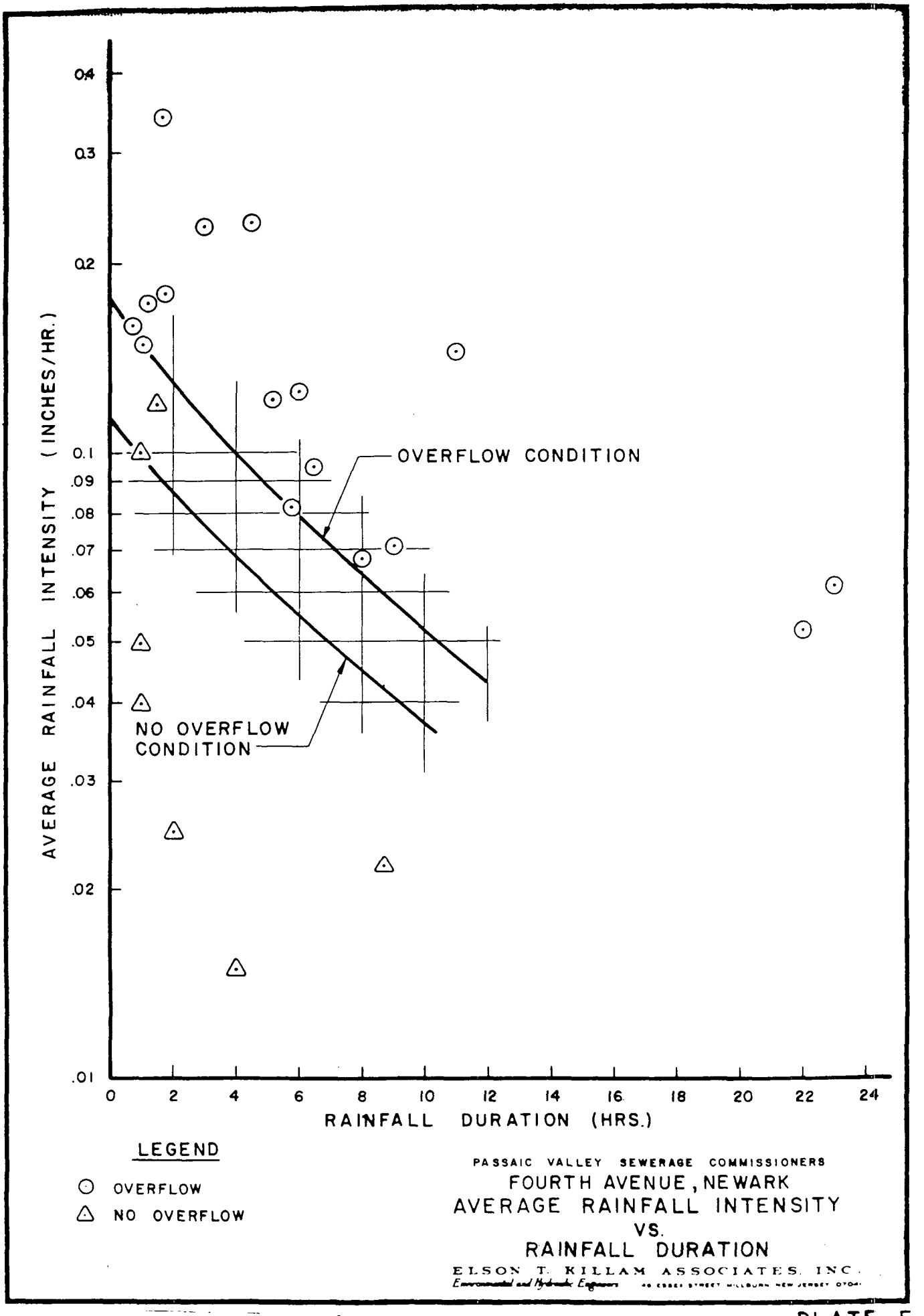
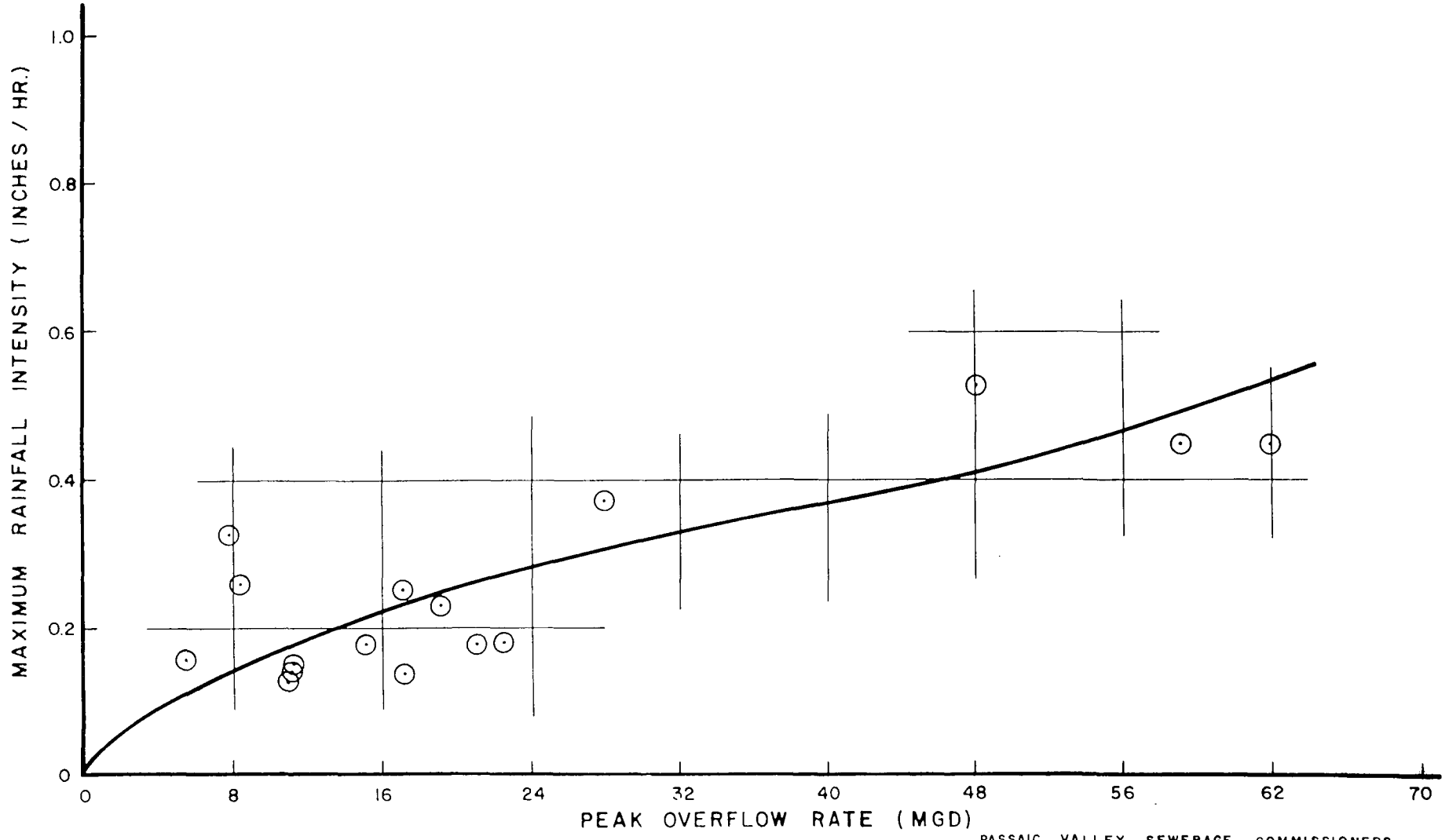


PLATE E

946200062



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

FOURTH AVENUE, NEWARK

MAXIMUM RAINFALL INTENSITY

VS.

PEAK OVERFLOW RATE

946200063

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers · 45 ESSEX STREET, MILLBURN NEW JERSEY 07041

PLATE F

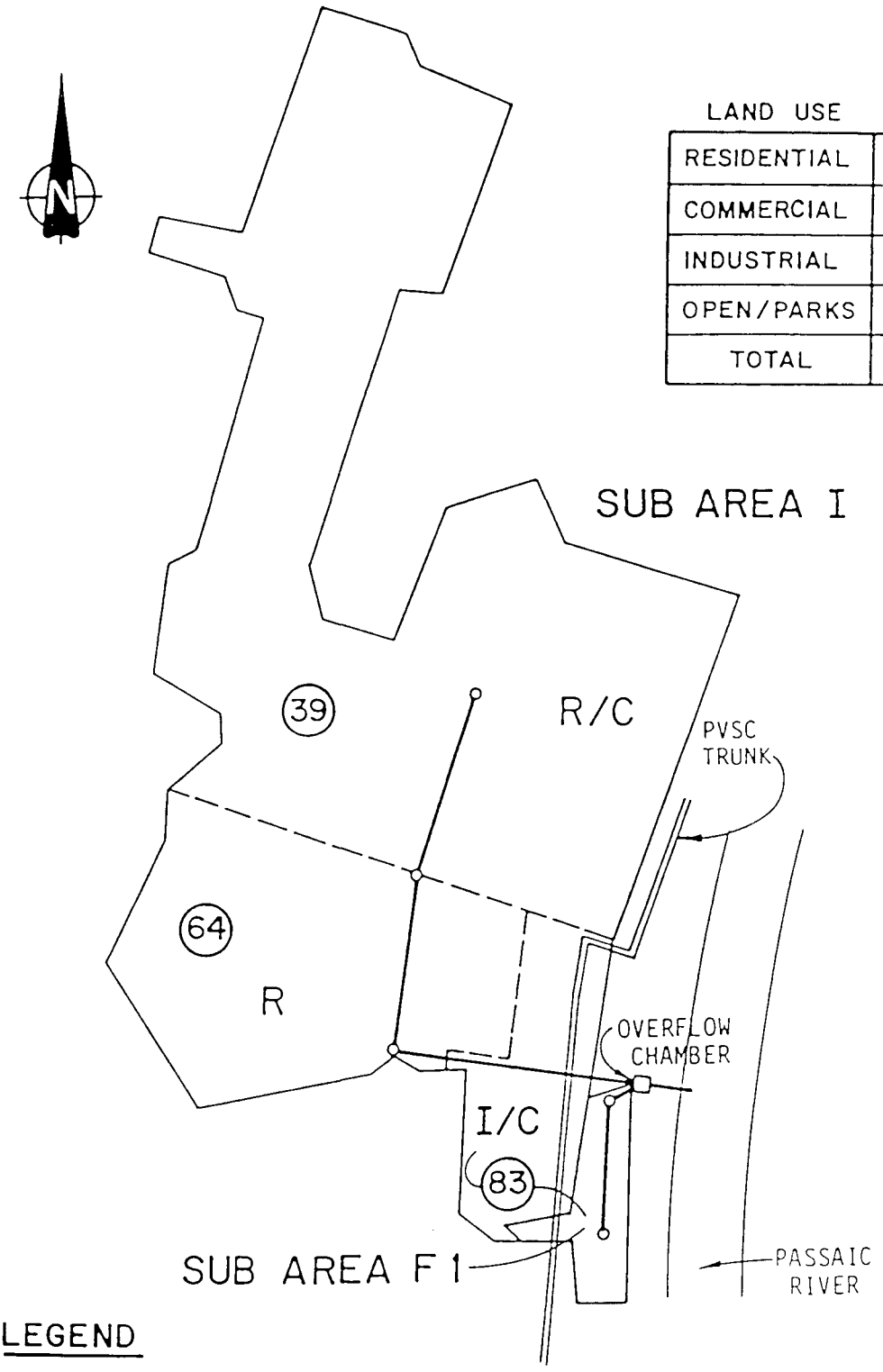
P.V.S.C Reference # K-13

Date: November 6, 1974

Elson Killam Associates-Infiltration Studies
Fourth Avenue, Newark 12:40 P. M.-11/5/74 to 10:00 A. M.-11/6/74
22 SAMPLES- First Manhole upstream from Sandcatcher

Baseline

Sample #	pH	T.S.S	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C/ C.O.D.	B.O.D.	B.O.D./ C.O.D
1	7.8	54	14	25.9	412	138	33.5	280	68.0
2	7.9	52	10	19.2	329	108	32.8	213	64.7
3	7.8	78	62	79.5	270	87	32.2	168	62.2
4	7.9	66	60	90.9	290	90	31.0	155	53.4
5	7.7	54	44	81.5	321	96	29.9	217	67.6
6	7.5	76	72	94.7	396	99	25.0	282	71.2
7	7.6	70	54	77.1	333	108	32.4	255	76.7
8	7.5	48	48	100.0	286	93	32.5	225	78.7
9	7.4	70	58	82.9	333	87	26.1	225	67.7
10	7.6	78	66	84.6	270	72	26.7	178	65.9
11	7.8	40	22	55.0	196	75	38.2	117	56.1
12	7.8	34	12	35.3	169	60	35.5	114	67.5
13	7.4	36	30	83.3	106	18	45.3	77	72.6
14	7.5	66	56	84.8	78	28	35.9	41	52.6
15	7.5	20	8	40.0	59	22	37.3	29	49.2
16	7.6	32	18	56.3	63	24	38.1	30	47.6
17	7.8	0	0	--	55	25	45.5	17	30.9
18	7.6	0	0	--	82	31	37.8	68	82.9
19	7.7	0	0	--	216	84	38.9	208	96.3
20	7.9	24	20	83.3	333	111	33.3	244	73.3
21	7.8	20	14	70.0	337	123	36.5	190	56.4
22	7.7	18	12	66.7	361	117	32.4	254	70.4
23			NO SAMPLE						
24			NO SAMPLE						
							34.4		65.1



LAND USE	%	ACRES
RESIDENTIAL	51	102
COMMERCIAL	35	71
INDUSTRIAL	10	20
OPEN/PARKS	4	7
TOTAL	100	200

LEGEND

- MAIN INTERCEPTOR
- R RESIDENTIAL
- C COMMERCIAL
- I INDUSTRIAL
- O/P OPEN/PARK
- SUBCATCHMENT BOUNDARY
- (15) PERCENT IMPERMEABLE AREA WITHIN SUBCATCHMENT
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISSIONERS

NEW JERSEY

COMBINED SEWER OVERFLOW FACILITY PLAN

LAND USE
FOURTH AVENUE OVERFLOW
CITY OF NEWARK

Elson T. Killam Associates, Inc.
Environmental and Hydraulic Engineers
27 Bleeker Street Millburn New Jersey 07041

FIGURE N–005

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

CLAY STREET, NEWARK
N-006

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 48 ESSEX STREET MILLBURN NEW JERSEY 07041

CLAY STREET OVERFLOW CHAMBER

The Clay Street overflow serves a tributary area of approximately 2,874 acres, 1,621 acres of which contain combined sewers. The theoretical dry weather flow in this tributary area was determined to be approximately 14.6 MGD. The actual dry weather flow was found to be 27.2 MGD during dry weather months and 31.6 MGD during wet weather months. Therefore, it has been determined that the infiltration in this tributary area ranges from about 12.6 to 17 MGD, compared with theoretical flows.

Under storm flow conditions, it was found that this overflow is activated with essentially every rain.

The Clay Street overflow chamber is an outlet for the largest combined sewer system and drainage area tributary to the Passaic Valley interceptor sewer. The discharge is into the Passaic River at a point opposite Clay Street.

Depth measurement facilities were installed in the Clay Street overflow chamber and were maintained in service from a period beginning September 13, 1974 through September 21, 1975. During this period of time, rainfall was measured on 70 occasions. Overflow was determined, therefore, to have occurred approximately 56 times or about 80 percent of the time. No overflow occurred when rainfall was very light and of short duration, with intensities of approximately 0.01 to 0.04 inches per hour. However, at intensities generally of about 0.06 inches per hour or more, overflow occurred. An examination of the records of

rainfall will indicate that a majority of the rainfall intensities during the period of observation ranged from about 0.05 to as high as 1.8 inches per hour and, under these conditions, overflow occurred. During the period of study, it was observed that the manual control of overflow at this chamber was required on approximately 18 to 20 occasions.

The Clay Street overflow chamber is required to be manually controlled to increase the overflow which would otherwise occur under automatic operation in order to prevent surcharge and damage in the collection system.

During the period of observation and study, it was observed that the volume of overflow under automatic conditions approached 50 million gallons, while occurrences of 10 million gallons were not uncommon. The peak rate of discharge was found to be in excess of 300 MGD on two separate occasions.

Since this chamber must be manually controlled, the closing of the valve results in the discharge of all tributary flow into the Passaic River. Measurements were, therefore, taken to establish both peak flow rates and volume of overflow under these conditions. As a result of the closing of the valves, the volume of overflow ranged from 25 million gallons to 45 million gallons on many occasions. The peak flow rates were likewise higher when the valve was closed and these were found to be in excess of about 50 percent greater than what would occur under automatic conditions of overflow--200 MGD in lieu of 120 MGD, and 220 MGD in lieu of 140 MGD.

At the Clay Street overflow chamber, surcharge was observed in the outfall line at such times as high tide and high river stages occurred in the Passaic River. Under these conditions, the backwater from the Passaic River controlled the volume of overflow which would otherwise occur at this chamber. At no time was inflow or river water intrusion observed at this chamber.

The quality of the overflow was also determined by automatic sampling during some of the overflow occurrences. In general, it was observed that there was an extreme variation in the quality of the overflow, but the quality was considered to be very objectionable because of the high BOD, high TSS, and high COD, all of which are attributed in great part to the heavy concentration of industrial waste. For example, the average BOD in the overflow ranged from 124 mg/l to as high as 275 mg/l. Peak concentrations of individual samples almost as high as 700 mg/l were not uncommon. The COD ranged from about 276 mg/l to as high as 879 mg/l. The suspended solids ranged from about 125 mg/l to as high as 960 mg/l. The wide range in storm water overflow quality is attributed to the flushing effect which occurs in the initial sampling, during periods of high storm flow runoff, and the high concentration of industrial and sanitary wastes in the tributary area.

It will be noted that approximately 1300 acres are tributary from the City of East Orange, and this increment of flow is strictly sanitary sewage. The major portion of the Newark area (90 percent) has combined sewers and the balance in the City in this district is separate sanitary sewer lines.

Based upon the observations at this overflow chamber, it appears that 46 to over 60 overflows per year can be anticipated at this location--depending upon the number of times, of course, that rainfall occurs. It appears that overflow is likely to occur approximately 66 percent of the time that rainfall occurs.

ELSON T. KILLAM ASSOCIATES, INC.

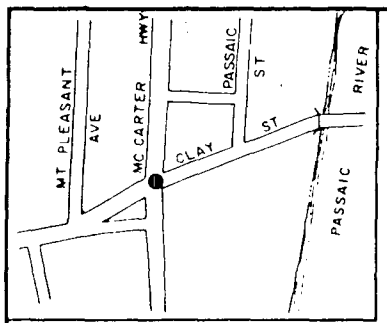
OVERFLOW DATA EXTRACT

CLAY STREET OVERFLOW CHAMBER

NEWARK

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	Highly developed residential and industrial area
Overflow Location (See Plate A):	On westerly side of intersection of Clay Street and McCarter Highway
District Outlet Sewer (See Plates A and B):	Twin 111" x 81" semi-elliptical concrete sewers
Outfall to River (See Plates A and B):	Twin 111" x 81" semi-elliptical concrete sewers
Outfall Condition:	Clear of debris and functioning
Tidal Effects:	None noted
Surcharge Effects:	Surcharge evident due to tide gate closure with rising tide
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River, through six tide gates.



LOCATION PLAN

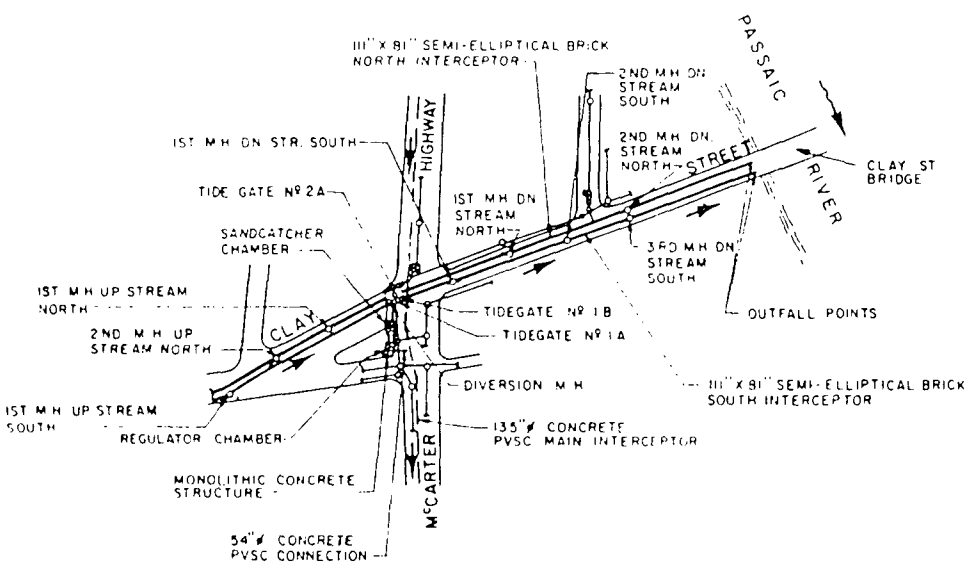
SCALE IN FEET

NOTE.

- ALL SIDE PIPELINES EXCEPT PVSC MAIN INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY

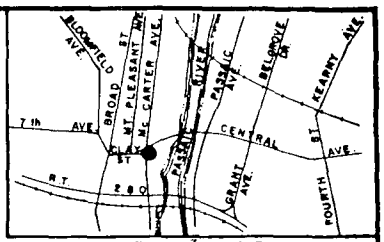
LEGEND.

- DIRECTION OF FLOW
- SC = SAND CATCHER
- TG = TIDE GATE
- UP STR = UP STREAM
- DN STR = DOWN STREAM
- N.T.S = NOT TO SCALE
- ● = OVERFLOW LOCATION

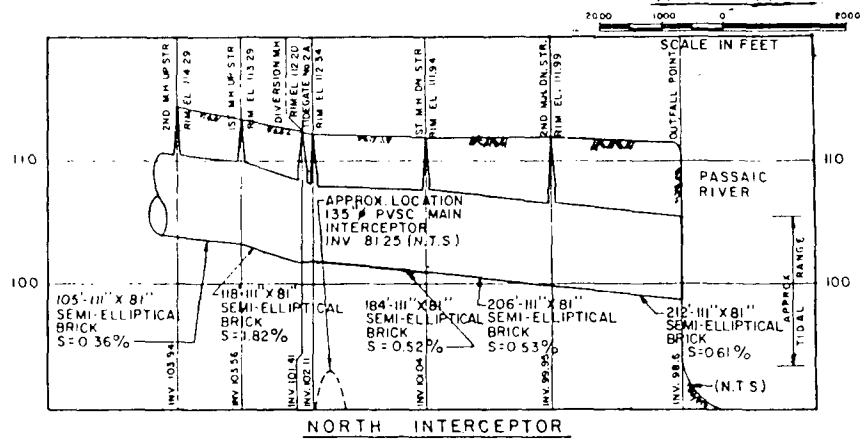


PLAN

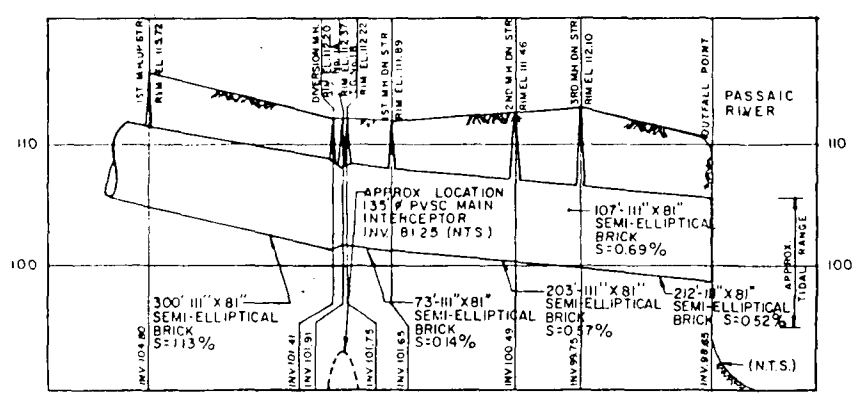
SCALE IN FEET



KEY MAP



NORTH INTERCEPTOR



PROFILES

SOUTH INTERCEPTOR

HORIZ. SCALE IN FEET

VERT. SCALE IN FEET

946200072

ALL ELEVATIONS BASED ON B.M. No. 80604 AS ESTABLISHED BY NEW JERSEY GEODETIC SURVEY CONTROL FOR LOCATION AND DESCRIPTION SEE APPENDIX.

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER N-006

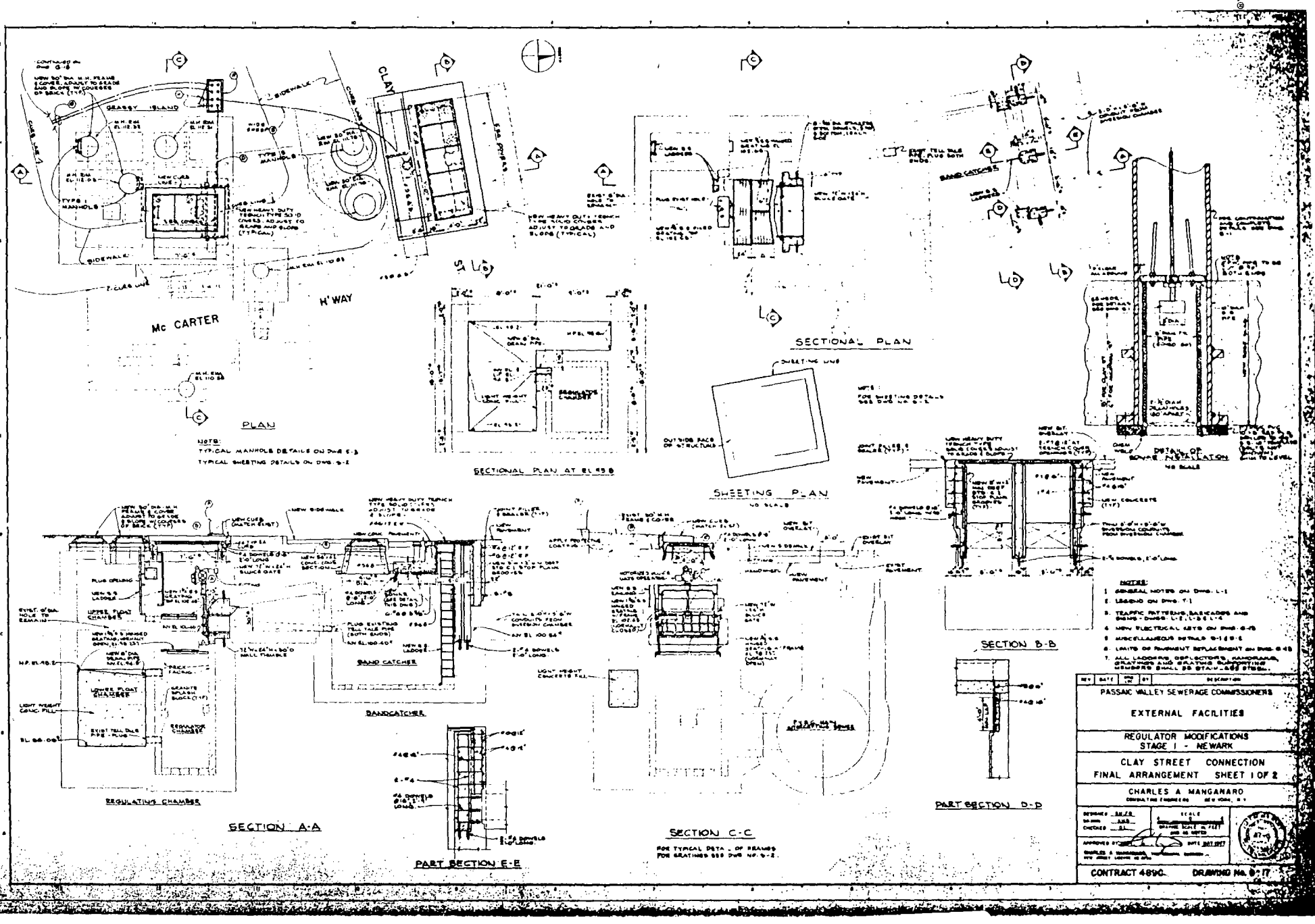
CLAY STREET, NEWARK

PLAN AND PROFILES

ELSON T. KILLAM ASSOCIATES, INC.

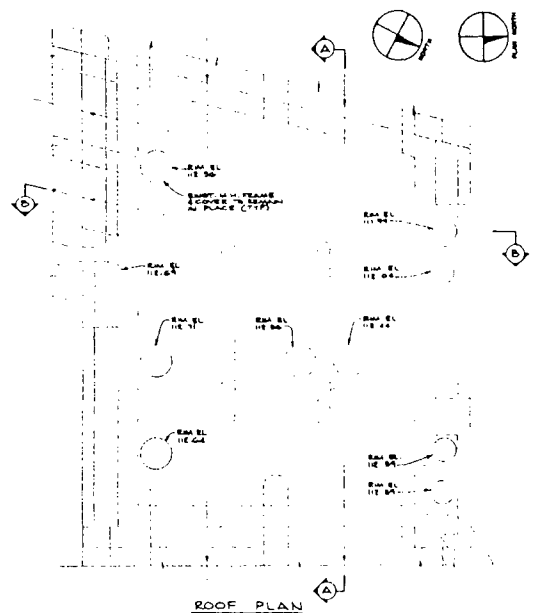
Environmental and Hydraulic Engineers

PLATE A

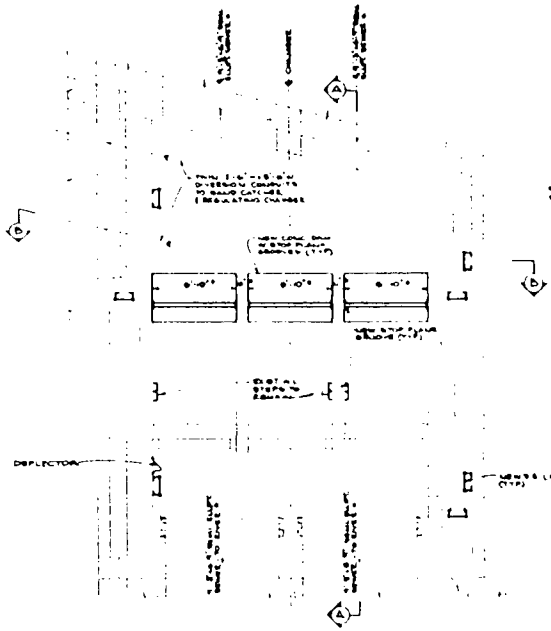


946200073

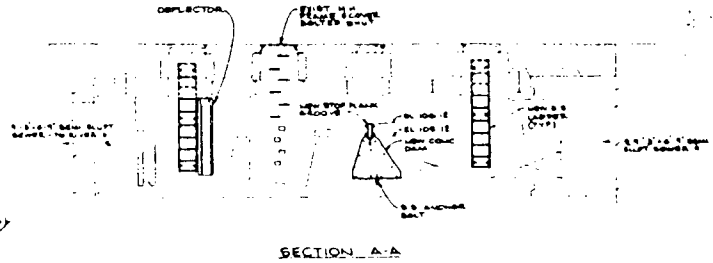
PLATE B-1



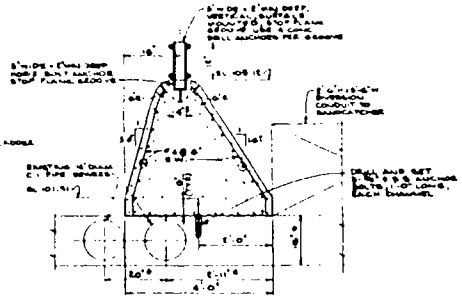
ROOF PLAN



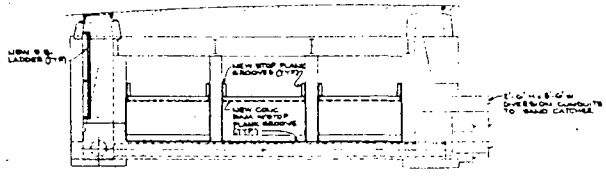
SECTIONAL PLAN



SECTION A-A



DETAIL OF CONC DAM



SECTION B-B

PASSAIC VALLEY SEWERAGE COMMISSIONERS

EXTERNAL FACILITIES

REGULATOR MODIFICATIONS
STAGE I - NEWARK

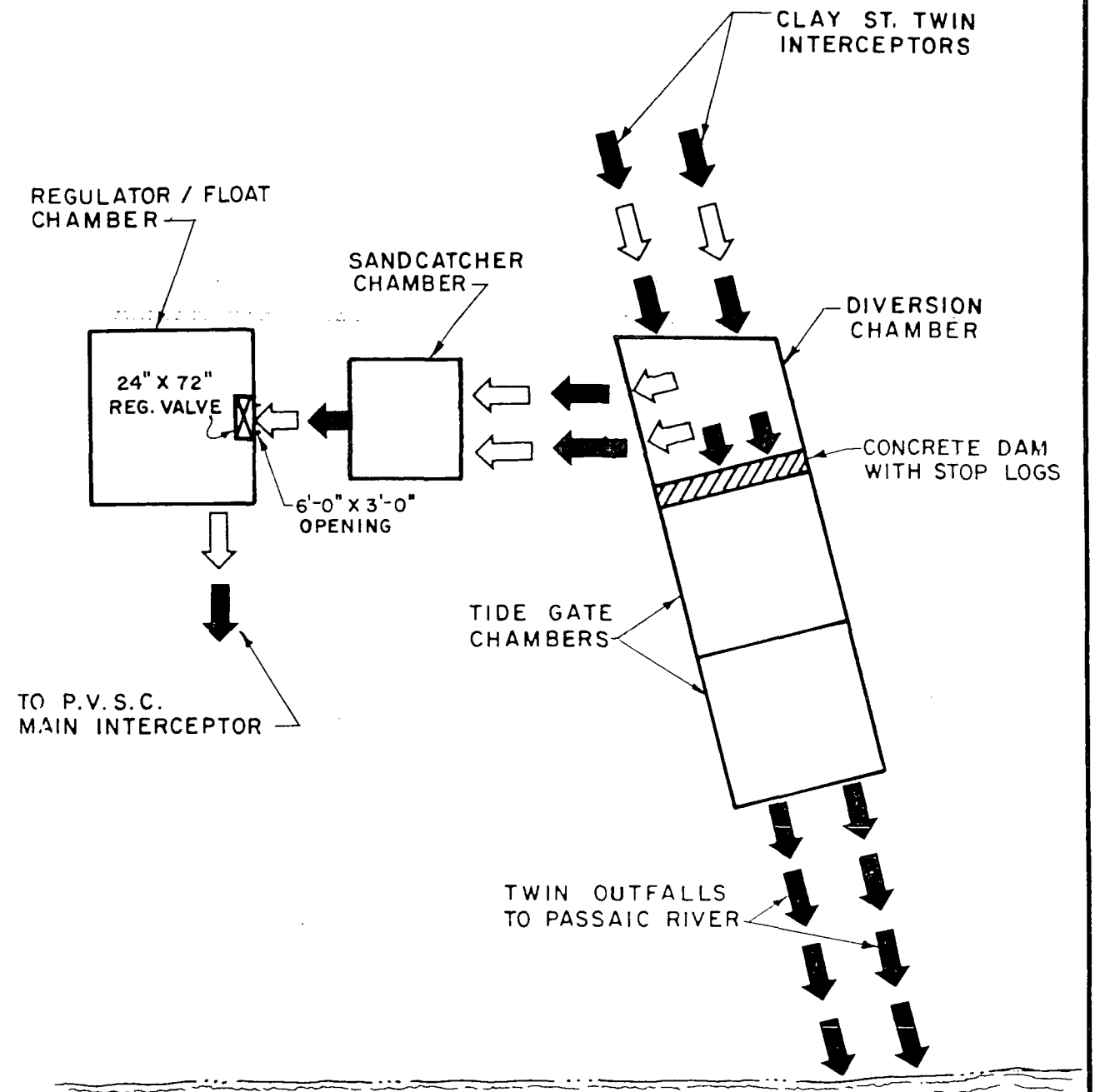
CLAY STREET CONNECTION
FINAL ARRANGEMENT SHEET 2 OF 2

CHARLES A. MANGANARO

CONTRACT 4690

946200074

PLATE B-2



LEGEND

⇨ DRY WEATHER FLOW

➡ STORM FLOW/OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

CLAY STREET, NEWARK

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946200075

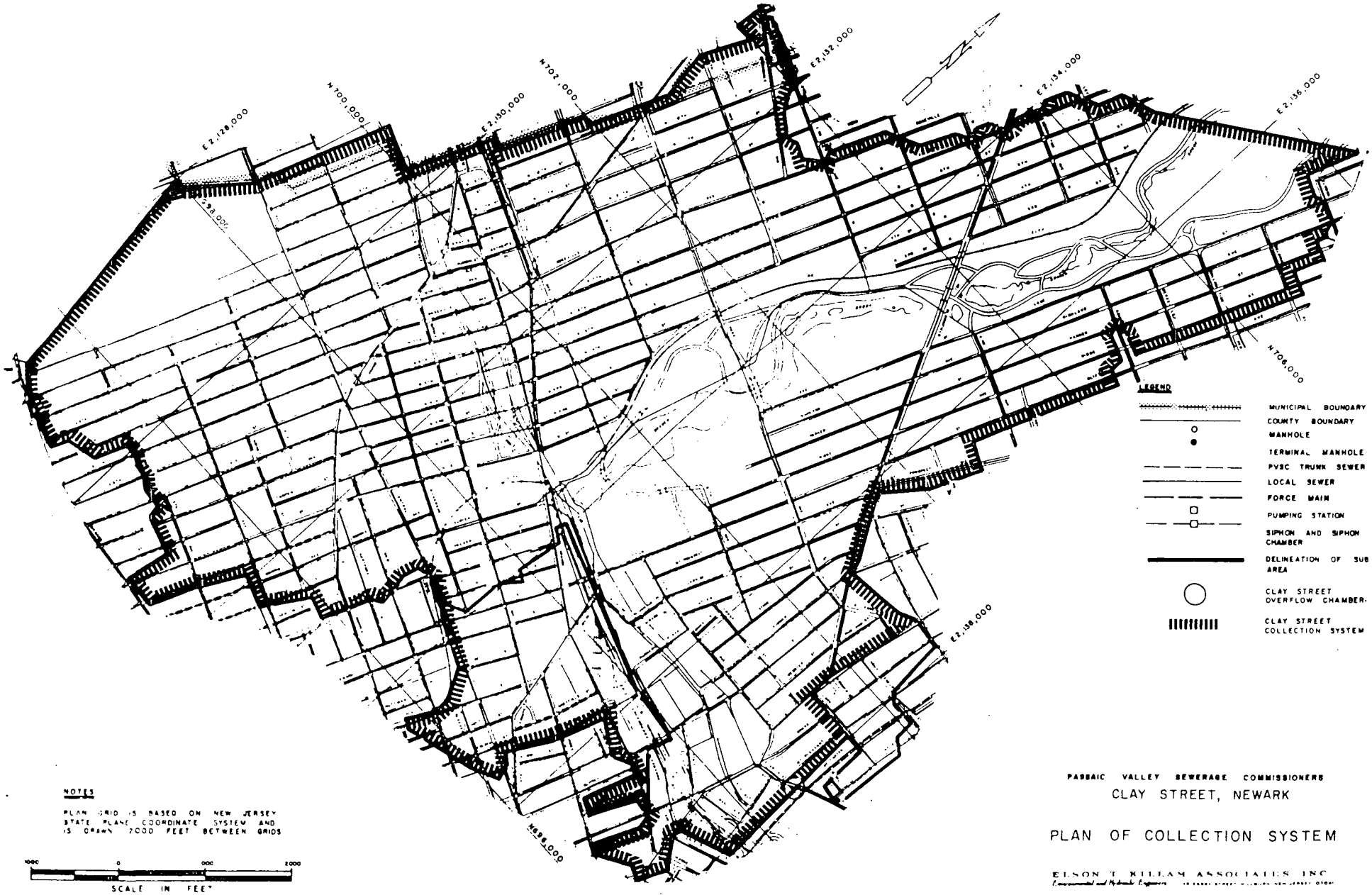
PLATE C

CLAY STREET OVERFLOW CHAMBER N-006 (Cont'd)

Condition of Regulator:	Inoperable in automatic mode, but may be operated to closure, manually
Special Actions Required:	All combined flow diverted to river during rainfall by closing regulator valve manually when, based on prior experience, heavy combined flows are anticipated.
Overflow Stop Log/Dam Condition:	Located in diversion chamber, upstream of tide gate chambers.
Tide Gate Condition:	2nd tide gate on southernmost opening jammed open, as well as 1st tide gate on center opening. All other gates appear to be leaking (See Plate B).
Note:	During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	2.538 square miles - 1,621 acres
Average Daily Flow	
Seasonal Dry Weather:	27.2 MGD
Seasonal Wet Weather:	31.6 MGD
Estimated Combined Flow to Produce an Overflow:	73 MGD
Approximate Length of Combined Sewers Serving District:	299,000 linear feet



PASSAIC VALLEY SEWERAGE COMMISSIONERS

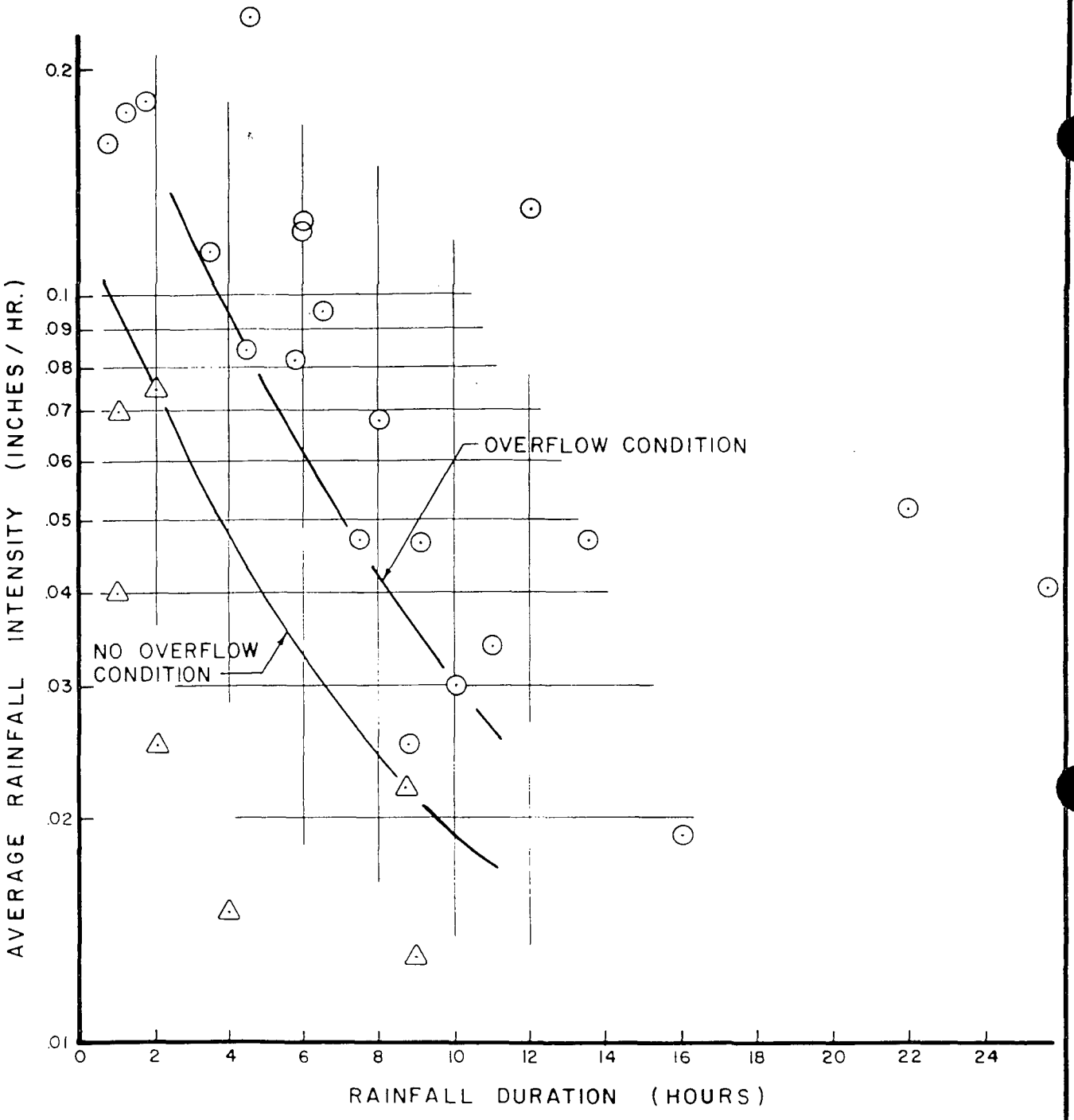
CLAY STREET, NEWARK

PLAN OF COLLECTION SYSTEM

ELSON T. KILLAM ASSOCIATES, INC.

946200077

PLATE D



LEGEND

⊙ OVERFLOW

△ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

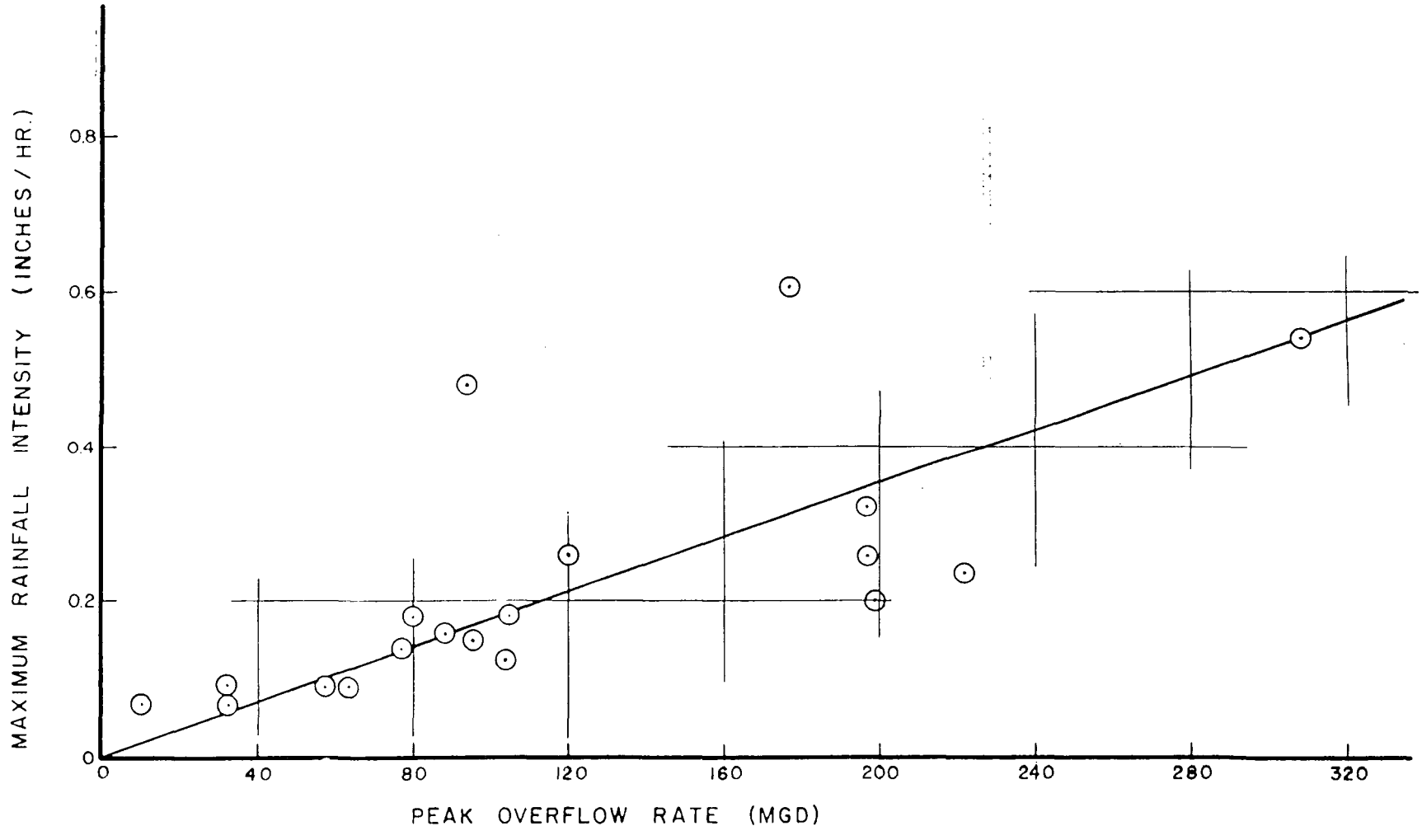
CLAY STREET, NEWARK

AVERAGE RAINFALL INTENSITY
VS.
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers

PLATE E

946200078



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

CLAY STREET, NEWARK

MAXIMUM RAINFALL INTENSITY
VS.
PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers · 46 ESSEX STREET MILLBURN, NEW JERSEY 07041

946200079

PLATE F

P.V.S.C Reference # K-17

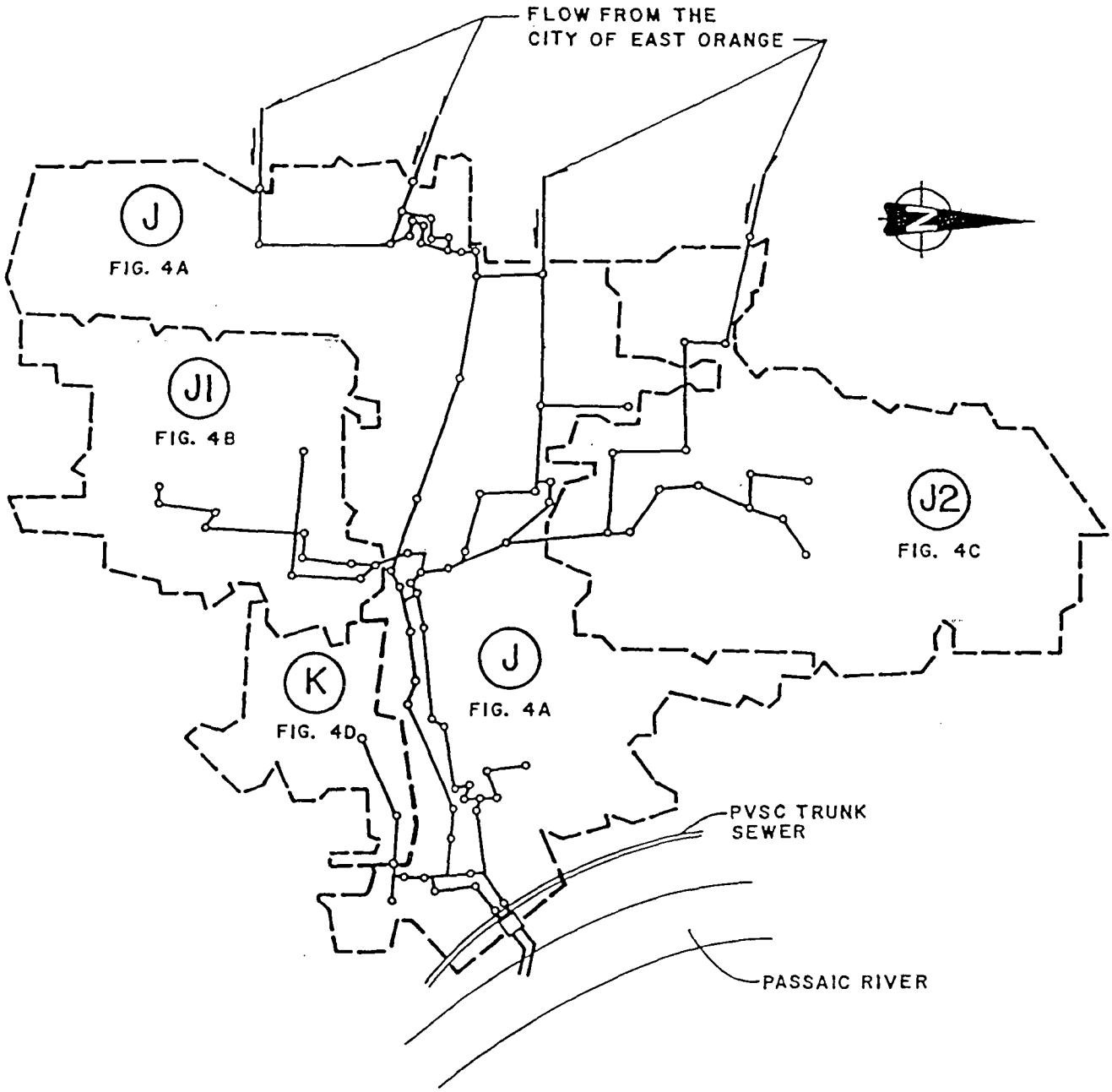
Date: November 7, 1974

Elson Killam Associates-Infiltration Studies
Clay Street, Newark- First Manhole Upstream from Sandcatcher,
11:30 A. M. 11/ 6/74 to 9:30 A. M. 11/7/74
23 Samples

Baseline

Sample #	pH	T.S.S	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C/ C.O.D.	B.O.D.	B.O.D./ C.O.D
3/4fill 1	7.5	160	144	90.0	481	132	27.4	364	75.5
2	7.3	262	260	99.2	Grease 974	in Sample 168	--	566	58.3
3	6.7	128	112	87.5	570	198	34.7	442	77.5
4	6.5	384	206	53.6	642	196	30.5	499	77.5
5	6.9	90	70	77.8	388	138	35.6	294	75.8
6	7.0	40	34	85.0	404	144	35.6	257	63.6
7	7.0	200	168	84.0	626	220	35.1	387	61.8
8	6.6	104	88	84.6	610	208	34.1	370	60.7
9	6.7	200	192	91.0	541	188	34.8	369	68.2
10	6.4	276	240	87.0	675	264	38.7	362	53.6
11	6.5	172	156	90.1	642	244	38.0	400	62.3
12	6.8	168	140	83.3	517	204	39.5	290	56.1
13	7.0	120	108	90.0	388	141	36.3	229	59.0
14	7.2	136	104	76.5	473	162	34.2	337	71.2
15	7.3	200	156	78.0	368	138	37.2	257	69.8
16	7.3	144	128	88.9	481	162	33.7	290	60.3
17	7.5	136	108	79.4	428	156	36.4	333	77.8
18	7.6	276	148	53.6	715	204	28.5	420	58.7
19	7.6	172	108	62.8	384	141	36.7	257	66.9
20	7.5	108	96	88.9	287	102	35.5	137	47.7
21	7.5	280	240	85.7	372	129	34.7	252	67.4
22	8.2	204	200	98.0	384	150	39.1	307	79.9
¾ fill 23	--	260	240	92.3	577	184	31.9	298	51.6
				NO SAMPLE					
Average		183.5					35.0	335.5	65.3

946200080



LEGEND

- MAIN INTERCEPTOR
- SUBCATCHMENT BOUNDARY
- (J) SUBCATCHMENT AS INDICATED IN PHASE IIA I/I REPORT

PASSAIC VALLEY SEWERAGE COMMISSIONERS

NEW JERSEY

COMBINED SEWER OVERFLOW FACILITY PLAN

LAND USE

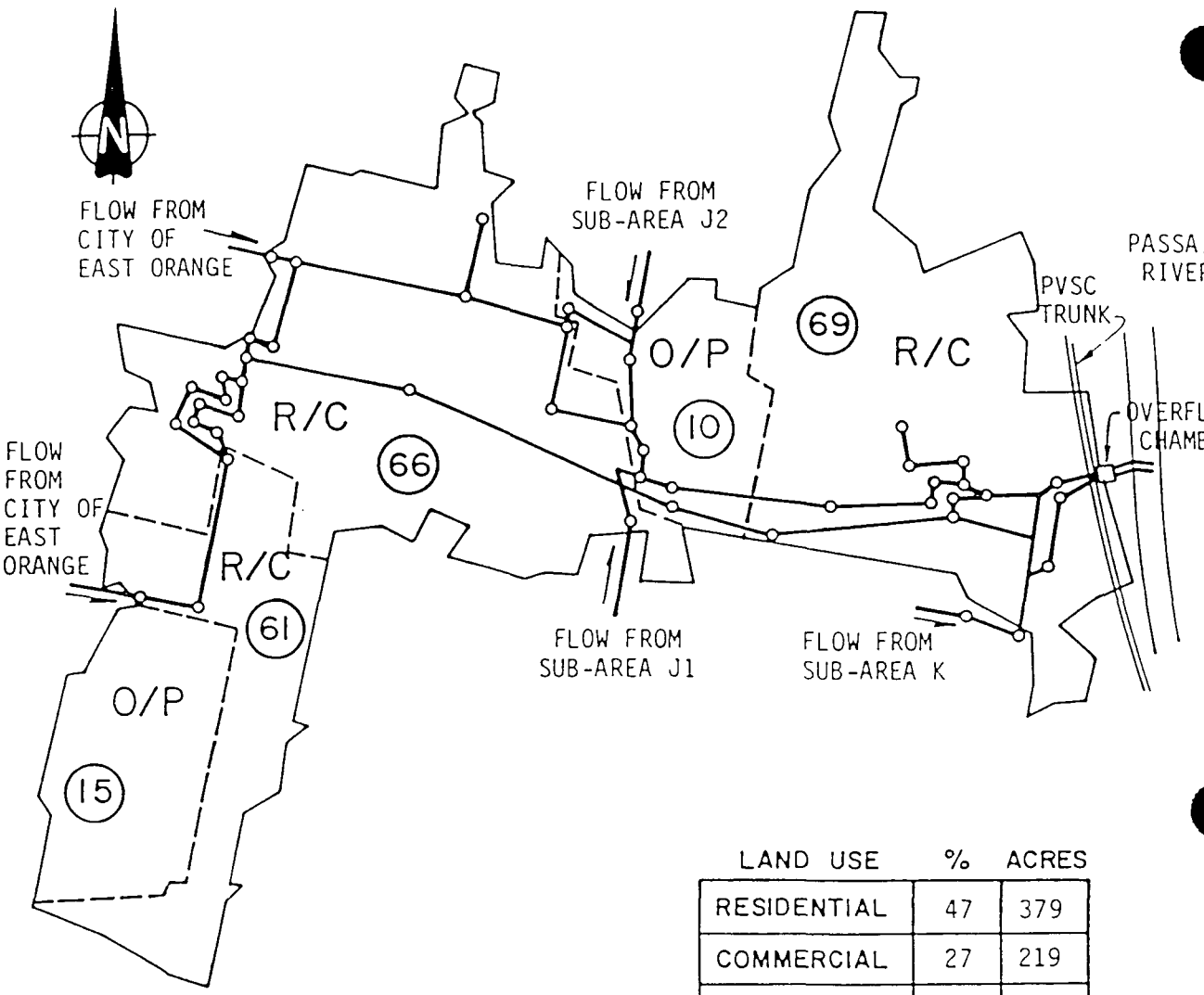
CLAY STREET OVERFLOW

CITY OF NEWARK

Elson T. Killam Associates, Inc.
Environmental and Hydraulic Engineers
27 Bleeker Street Millburn, New Jersey 07041

FIGURE N–006.1

946200081



LAND USE	%	ACRES
RESIDENTIAL	47	379
COMMERCIAL	27	219
INDUSTRIAL	8	60
OPEN/PARKS	18	147
TOTAL	100	805

SUB AREA J

LEGEND

- MAIN INTERCEPTOR
- R RESIDENTIAL
- C COMMERCIAL
- I INDUSTRIAL
- O/P OPEN/PARK
- SUBCATCHMENT BOUNDARY
- (15) PERCENT IMPERMEABLE AREA WITHIN SUBCATCHMENT
- SEPARATE STORM SEWER AREA

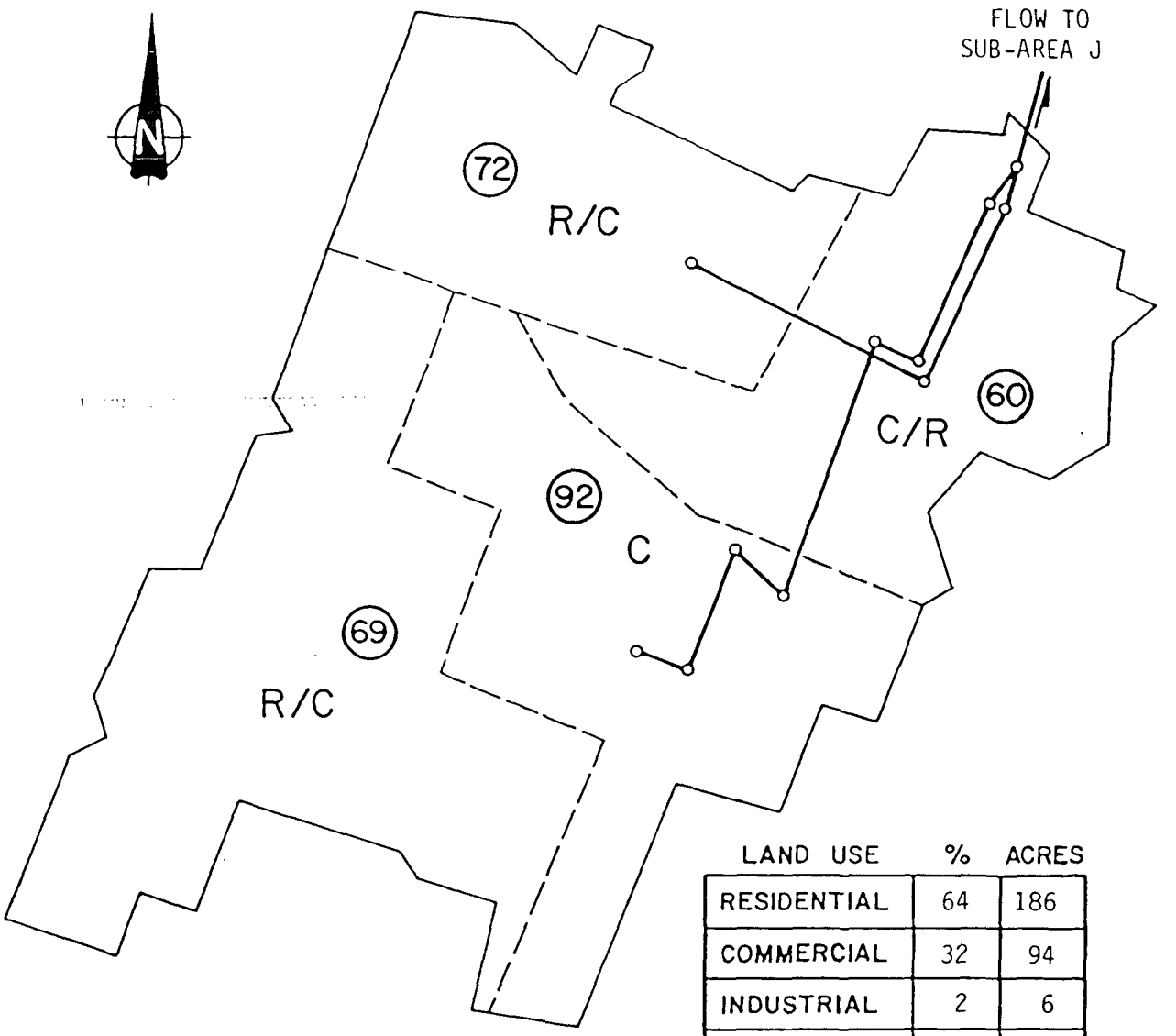
PASSAIC VALLEY SEWERAGE COMMISSIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW FACILITY PLAN

LAND USE
CLAY STREET OVERFLOW
CITY OF NEWARK

Elson T. Killam Associates, Inc.
Environmental and Hydraulic Engineers
27 Brook Street Millburn New Jersey 07041

FIGURE N–006.2

946200082



SUB AREA J1

LAND USE	%	ACRES
RESIDENTIAL	64	186
COMMERCIAL	32	94
INDUSTRIAL	2	6
OPEN/PARKS	2	7
TOTAL	100	293

LEGEND

- MAIN INTERCEPTOR
- R RESIDENTIAL
- C COMMERCIAL
- I INDUSTRIAL
- O/P OPEN/PARK
- SUBCATCHMENT BOUNDARY
- (15) PERCENT IMPERMEABLE AREA WITHIN SUBCATCHMENT

PASSAIC VALLEY SEWERAGE COMMISSIONERS

NEW JERSEY

COMBINED SEWER OVERFLOW FACILITY PLAN

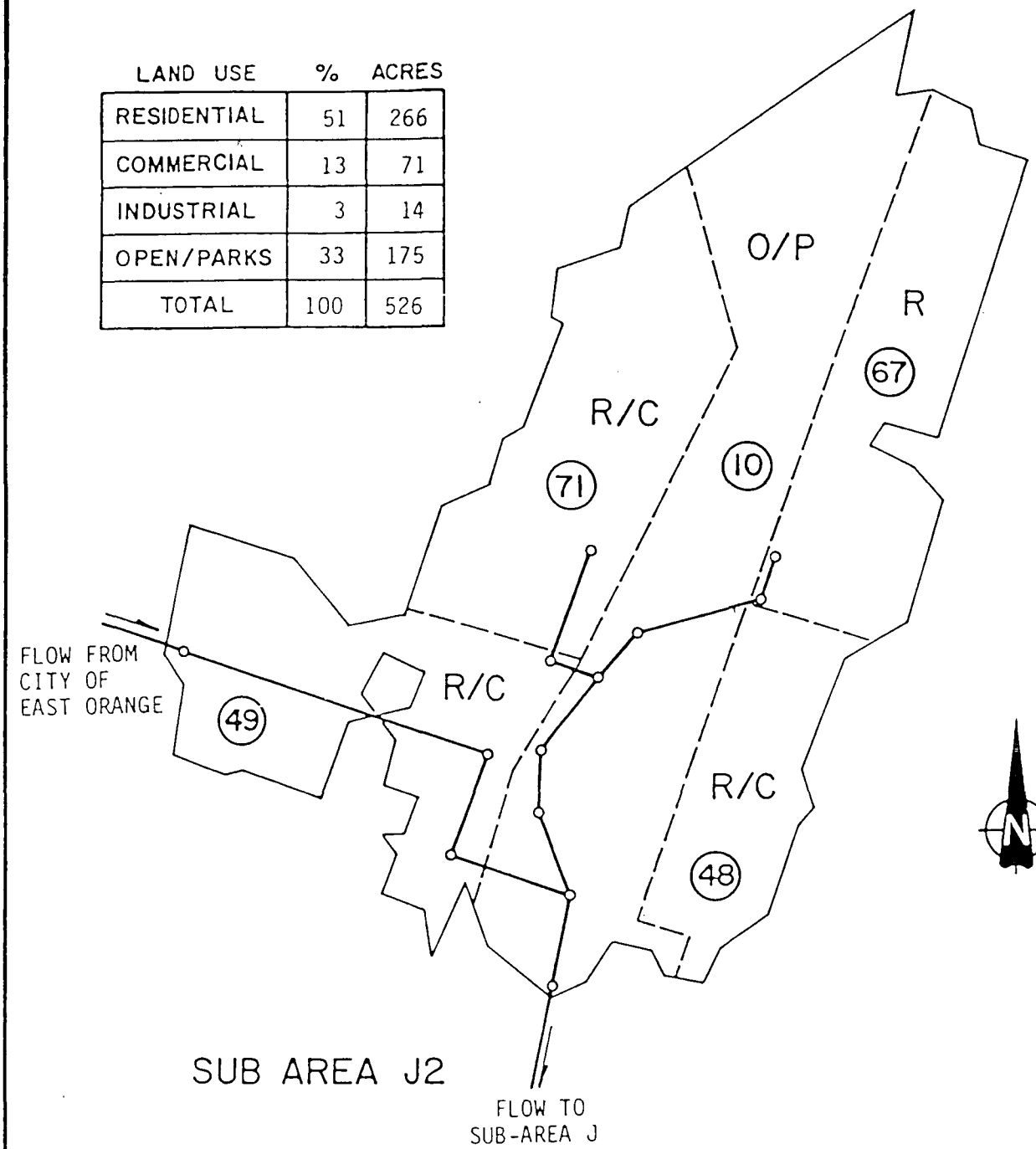
LAND USE
CLAY STREET OVERFLOW
CITY OF NEWARK

Elson T. Killam Associates, Inc.
Environmental and Hydraulic Engineers
27 Bleeker Street Millburn, New Jersey 07041

FIGURE N-006.3

946200083

LAND USE	%	ACRES
RESIDENTIAL	51	266
COMMERCIAL	13	71
INDUSTRIAL	3	14
OPEN/PARKS	33	175
TOTAL	100	526



LEGEND

- MAIN INTERCEPTOR
- R RESIDENTIAL
- C COMMERCIAL
- I INDUSTRIAL
- O/P OPEN/PARK
- SUBCATCHMENT BOUNDARY
- (15) PERCENT IMPERMEABLE AREA WITHIN SUBCATCHMENT
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISSIONERS

NEW JERSEY

COMBINED SEWER OVERFLOW FACILITY PLAN

LAND USE

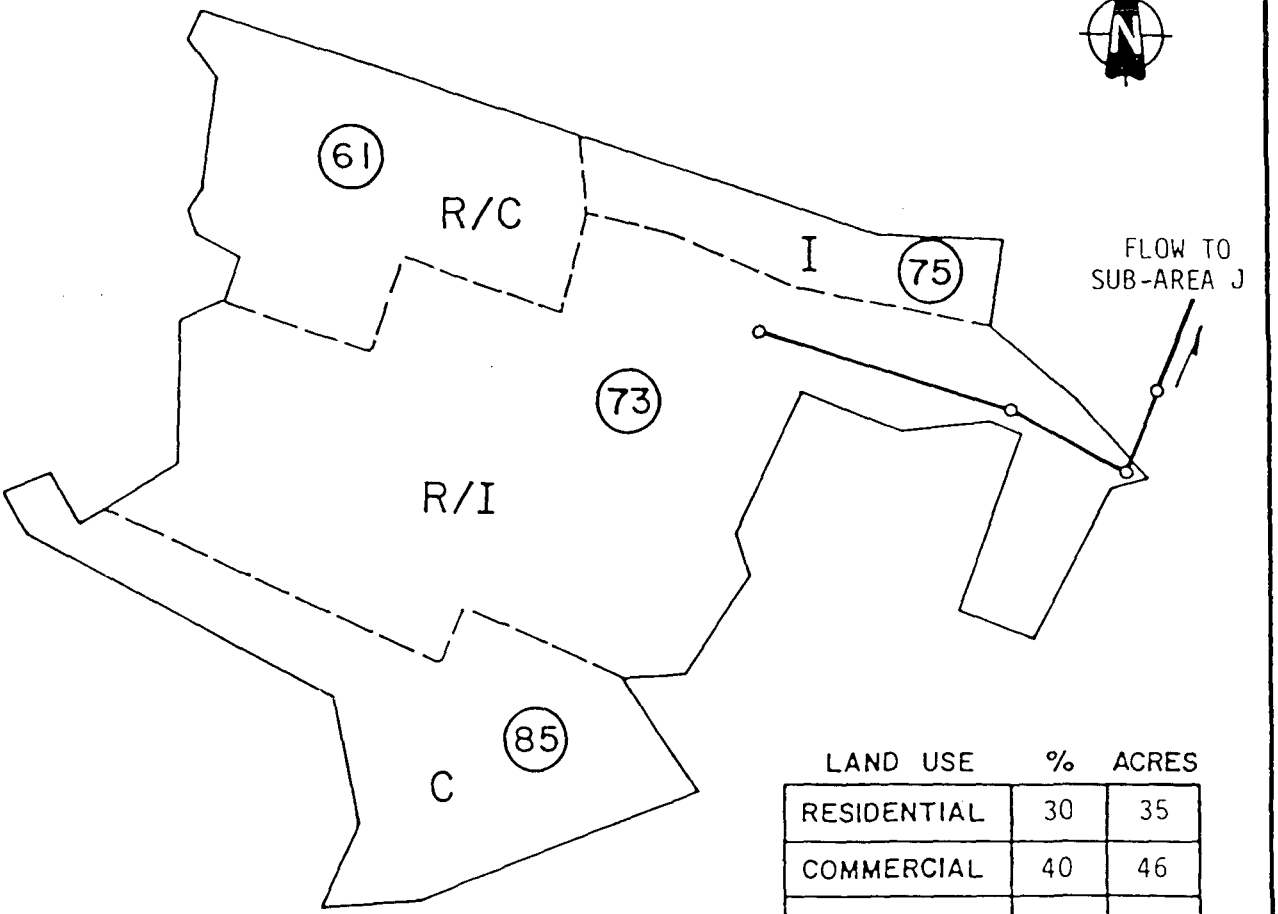
CLAY STREET OVERFLOW

CITY OF NEWARK

Elson T. Killam Associates, Inc.
Environmental and Hydraulic Engineers
77 Bleeker Street Millburn New Jersey 07041

FIGURE N–006.4

946200084



LAND USE	%	ACRES
RESIDENTIAL	30	35
COMMERCIAL	40	46
INDUSTRIAL	20	23
OPEN/PARKS	10	11
TOTAL	100	115

SUB AREA K

LEGEND

- MAIN INTERCEPTOR
- R RESIDENTIAL
- C COMMERCIAL
- I INDUSTRIAL
- O/P OPEN/PARK
- SUBCATCHMENT BOUNDARY
- (15) PERCENT IMPERMEABLE AREA WITHIN SUBCATCHMENT
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISSIONERS

NEW JERSEY

COMBINED SEWER OVERFLOW FACILITY PLAN

LAND USE
CLAY STREET OVERFLOW
CITY OF NEWARK

Elson T. Killam Associates, Inc.
Environmental and Hydraulic Engineers
27 Bleeker Street Millburn New Jersey 07041

FIGURE N-006.5

946200085

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

PASSAIC STREET, NEWARK
N-006C

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY 07041

PASSAIC STREET OVERFLOW CHAMBER

The Passaic Street overflow serves a tributary area of approximately 31 acres. This area is provided with combined sewers. The theoretical average daily flow in this district is 0.24 MGD. The measured average daily dry weather flow was found to be about 0.30 to 0.34 MGD. It has been determined that the infiltration in this tributary area is only about 0.1 MGD.

During the period of study, measurements were made of rainfall and overflow from the period commencing July 6, 1975 through October 18, 1975. During this period of time, rainfall occurred on eleven occasions. It was observed that overflow at this chamber was affected by the high tide conditions in the Passaic River. No overflow occurred when the tide was high under storm flow conditions, where the backwater resulted in closing of the tide gates.

However, measurements taken under low tide conditions indicated that overflows ranged up to 0.4 MG, with peak rates of 10.0 MGD.

Samples taken during dry weather flow periods indicated that suspended solids ranged from 42 mg/1 to 240 mg/1, while BOD concentrations ranged from 12 mg/1 to 191 mg/1.

Samples were taken of the overflow to establish typical wastewater characteristics. The average BOD was found to range from about 44 to 55 mg/1, and TSS from about 268 to 293 mg/1. This district is primarily industrial, but the results of the overflow sampling do not reflect a major pollutional loading. This condition may be attributed to the fact that high dilution prevailed during the period of sampling and testing.

It has been observed at this station that overflow under low tide conditions can occur even under dry weather flow. This is attributed to the fact that peak industrial discharges result in surcharging of the chamber and resultant overflow. This condition was observed on one occasion when no rainfall occurred. While the overflow was not substantial in volume, nor were the waste characteristics extremely severe, it does appear that this condition should be corrected by further study and investigation.

ELSON T. KILLAM ASSOCIATES, INC.

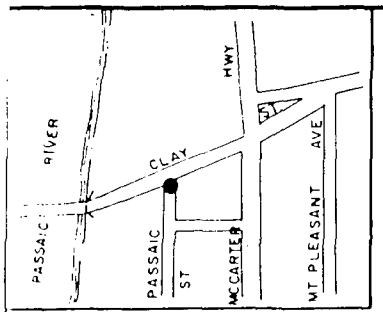
OVERFLOW DATA EXTRACT

PASSAIC STREET OVERFLOW CHAMBER

NEWARK

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River (through Clay Street outfall)
Character of District Served:	primarily industrial with some (±30 percent) residential flow
Overflow Location (See Plate A):	just north of intersection of Clay Street and Passaic Street
District Outlet Sewer (See Plates A and B):	18" diameter VTP sewer
Outfall to River (See Plates A and B):	74.5" X 104.5" semi-elliptical brick sewer
Outfall Condition:	clear and functioning
Tidal Effects:	some tidal intrusions noted
Surcharge Effects:	surcharge observed with tide gate closure due to high tides during storm flows
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.



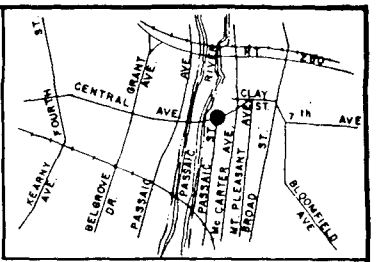
LOCATION PLAN

SCALE IN FEET

NOTE.
ALL SIDE PIPELINES EXCEPT PVSC BRANCH INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY

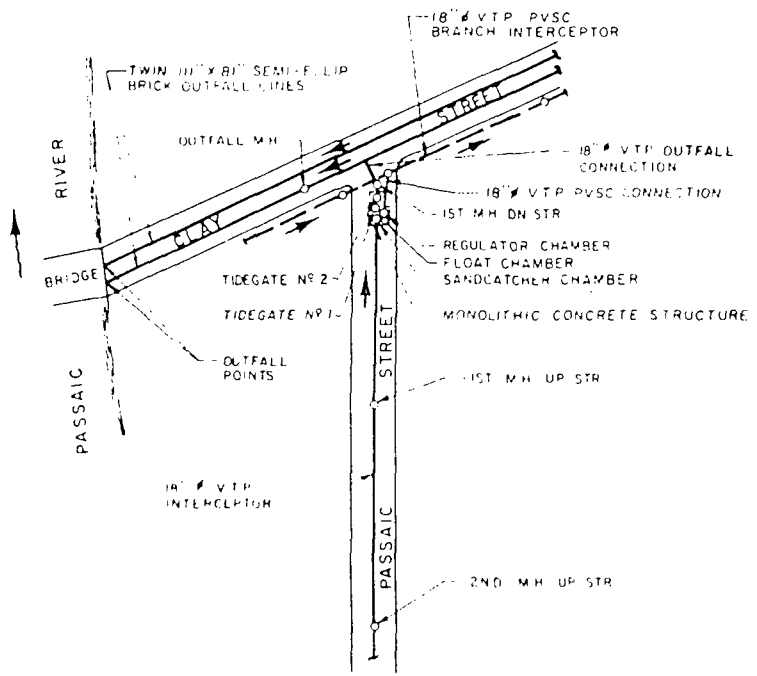
LEGEND

- DIRECTION OF FLOW
- SC : SAND CATCHER
- TG : TIDE GATE
- UP STR : UP STREAM
- DN STR : DOWN STREAM
- N.T.S : NOT TO SCALE
- VTP : VITRIFIED TILE PIPE
- ● : OVERFLOW LOCATION



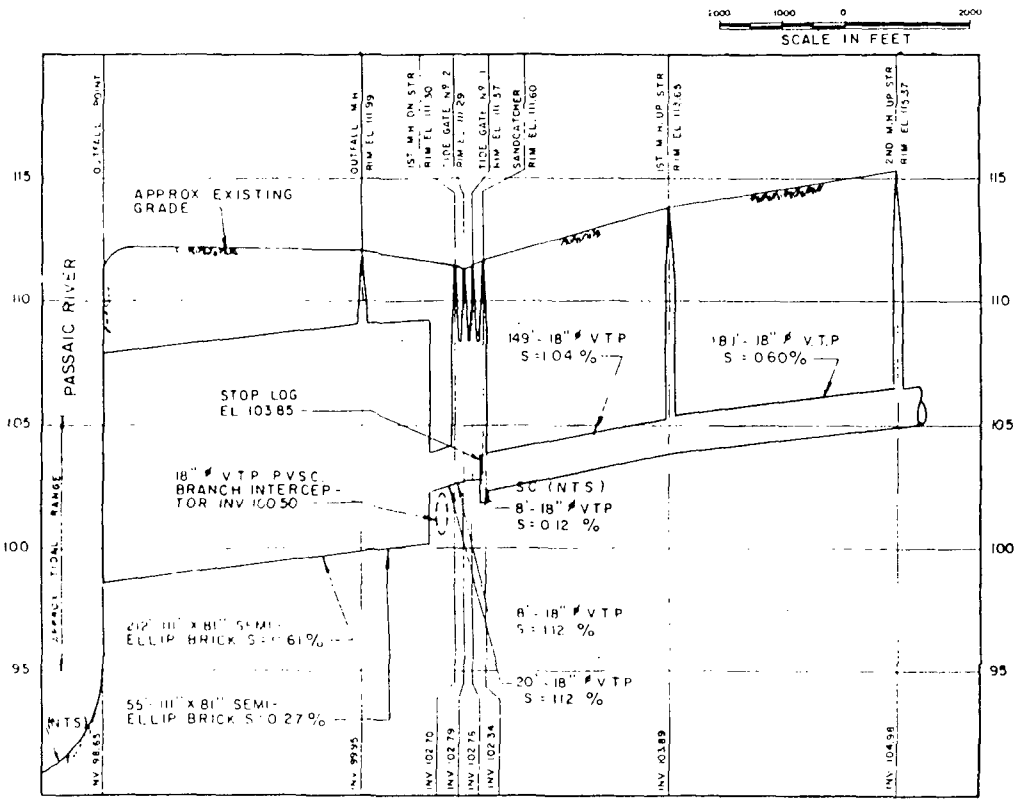
KEY MAP

SCALE IN FEET



PLAN

SCALE IN FEET



PROFILE

HORIZ SCALE IN FEET

VERT SCALE IN FEET

ALL ELEVATIONS BASED ON B.M. Nº [illegible] AS ESTABLISHED BY PAUL J. EMILIUS & ASSOCIATES FOR LOCATION AND DESCRIPTION SEE APPENDIX.

946200090

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER N-006C

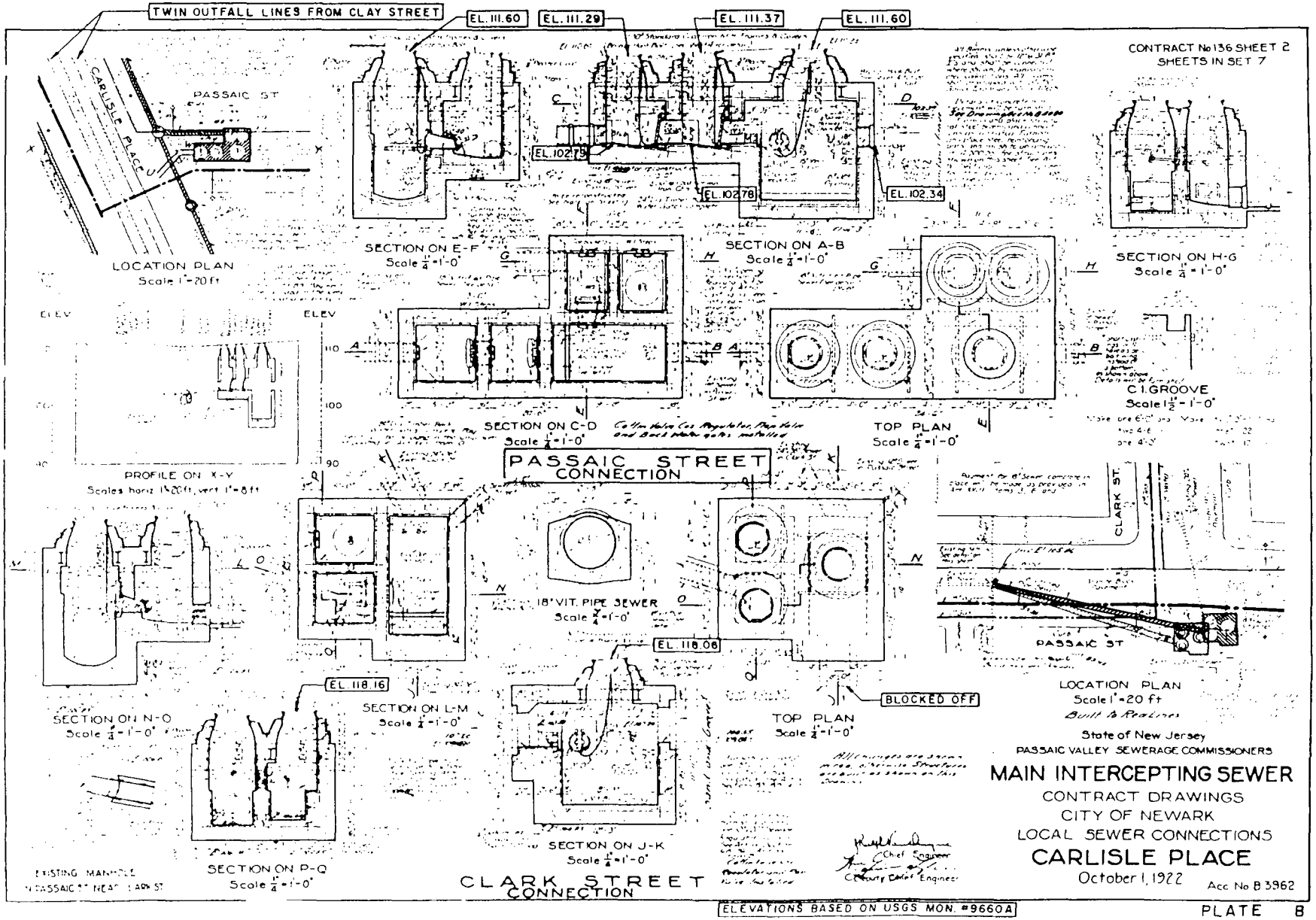
PASSAIC STREET, NEWARK

PLAN AND PROFILE

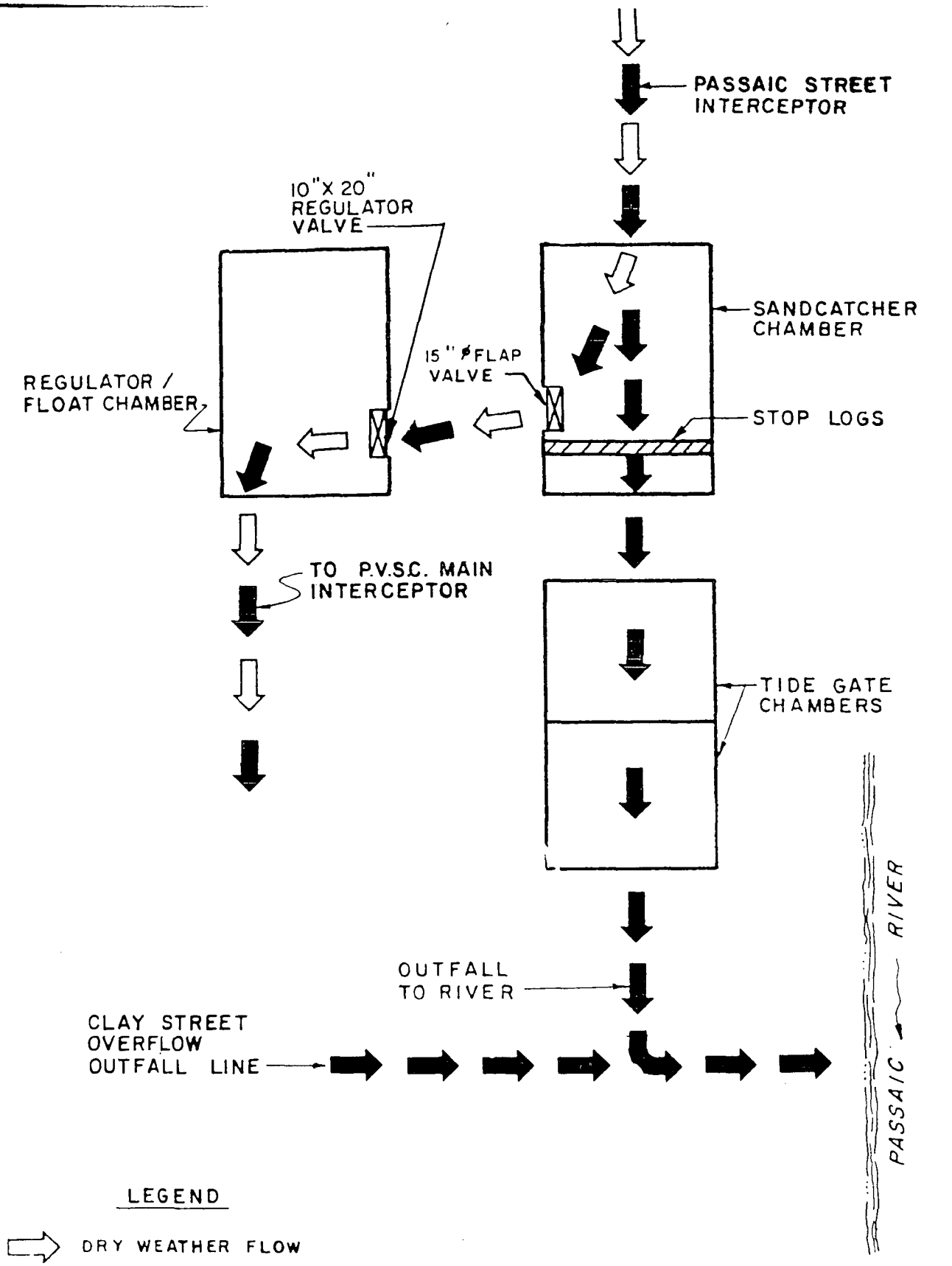
ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Municipal Engineers

PLATE A


TWIN OUTFALL LINES FROM CLAY STREET
EL. 111.60
EL. 111.29
EL. 111.37
EL. 111.60
CONTRACT No 136 SHEET 2
SHEETS IN SET 7
PASSAIC ST
CARLISLE PLACE
LOCATION PLAN
Scale 1"=20 ft
EL. 102.79
EL. 102.78
EL. 102.34
SECTION ON E-F
Scale 1/4"=1'-0"
SECTION ON A-B
Scale 1/4"=1'-0"
SECTION ON H-G
Scale 1/4"=1'-0"
ELEV
110
100
90
PROFILE ON X-Y
Scales horiz 1"=20ft, vert 1"=8ft
SECTION ON C-D
Scale 1/4"=1'-0"
TOP PLAN
Scale 1/4"=1'-0"
C.I. GROOVE
Scale 1 1/2"=1'-0"
PASSAIC STREET
CONNECTION
18" VIT. PIPE SEWER
Scale 1/4"=1'-0"
EL. 118.06
EL. 118.16
SECTION ON N-O
Scale 1/4"=1'-0"
SECTION ON L-M
Scale 1/4"=1'-0"
TOP PLAN
Scale 1/4"=1'-0"
BLOCKED OFF
CLARK ST.
PASSAIC ST
LOCATION PLAN
Scale 1"=20 ft
Built to Realines
EXISTING MANHOLE
N PASSAIC ST NEAR CLARK ST
SECTION ON P-Q
Scale 1/4"=1'-0"
SECTION ON J-K
Scale 1/4"=1'-0"
CLARK STREET
CONNECTION
Chief Engineer
State of New Jersey
PASSAIC VALLEY SEWERAGE COMMISSIONERS
MAIN INTERCEPTING SEWER
CONTRACT DRAWINGS
CITY OF NEWARK
LOCAL SEWER CONNECTIONS
CARLISLE PLACE
October 1, 1922
Acc No B 3962
ELEVATIONS BASED ON USGS MON. #9660A
PLATE B

946200091



PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC STREET , NEWARK

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946200092

PLATE C

PASSAIC STREET OVERFLOW CHAMBER N-006C (Cont'd.)

Condition of Regulator:	appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	stop logs located in sand catcher chamber just before opening to first tide gate chamber
Tide Gate Condition:	both tide gates missing from chambers

Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.049 square miles-31 acres
Average Daily Flow	
Seasonal Dry Weather:	0.30 MGD
Seasonal Wet Weather:	0.34 MGD
Estimated Combined Flow to Produce an Overflow:	4.8 MGD
Approximate Length of Combined Sewers Serving District:	4,800 linear feet

NOTES

PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS DRAWN 2000 FEET BETWEEN GRIDS

0 2000

SCALE IN FEET

946200094

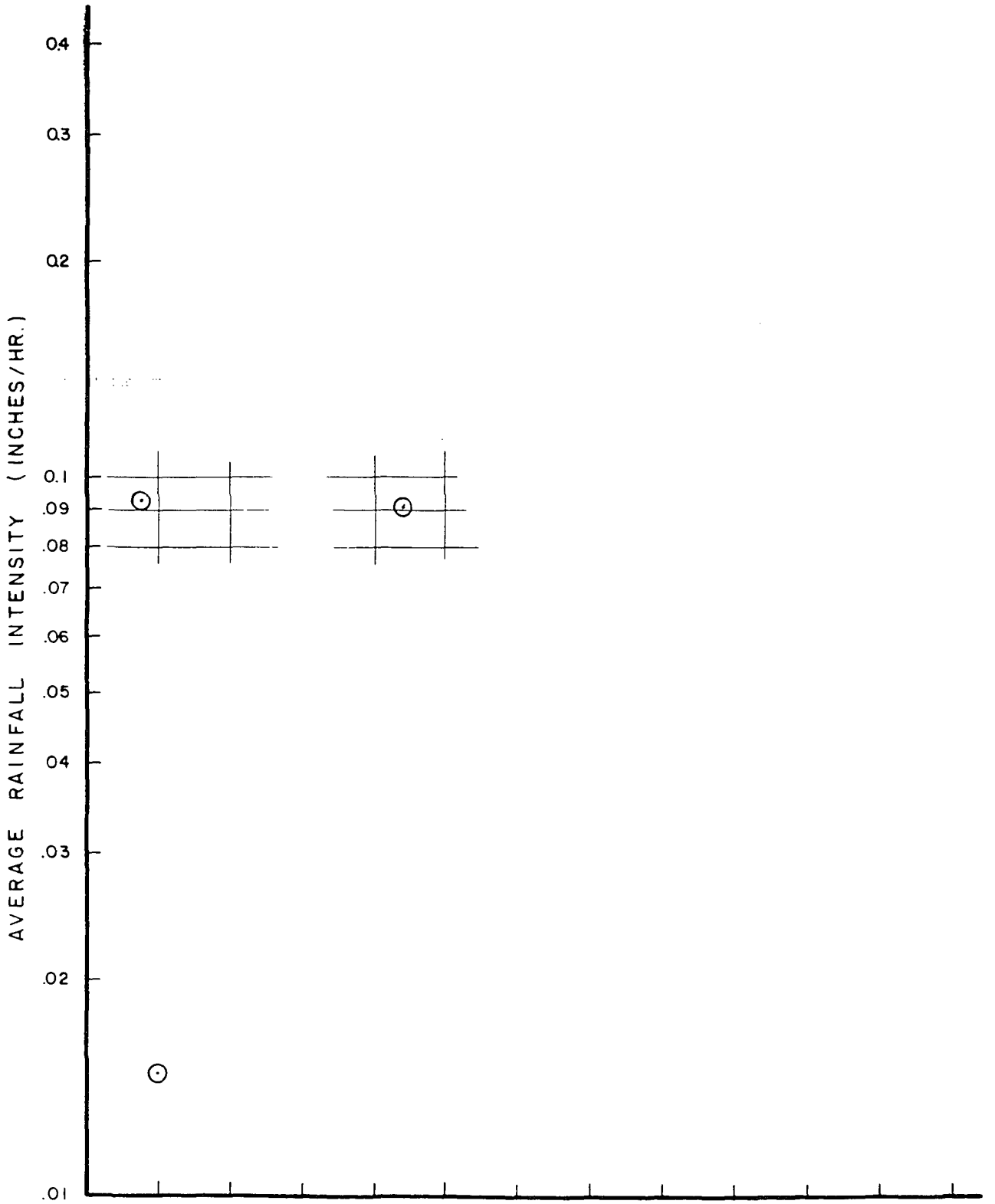
PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC STREET, NEWARK

PLAN OF COLLECTION SYSTEM

ELSON T. KILLAM ASSOCIATES, INC.

PLATE D



PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC STREET, NEWARK

AVERAGE RAINFALL INTENSITY

VS.

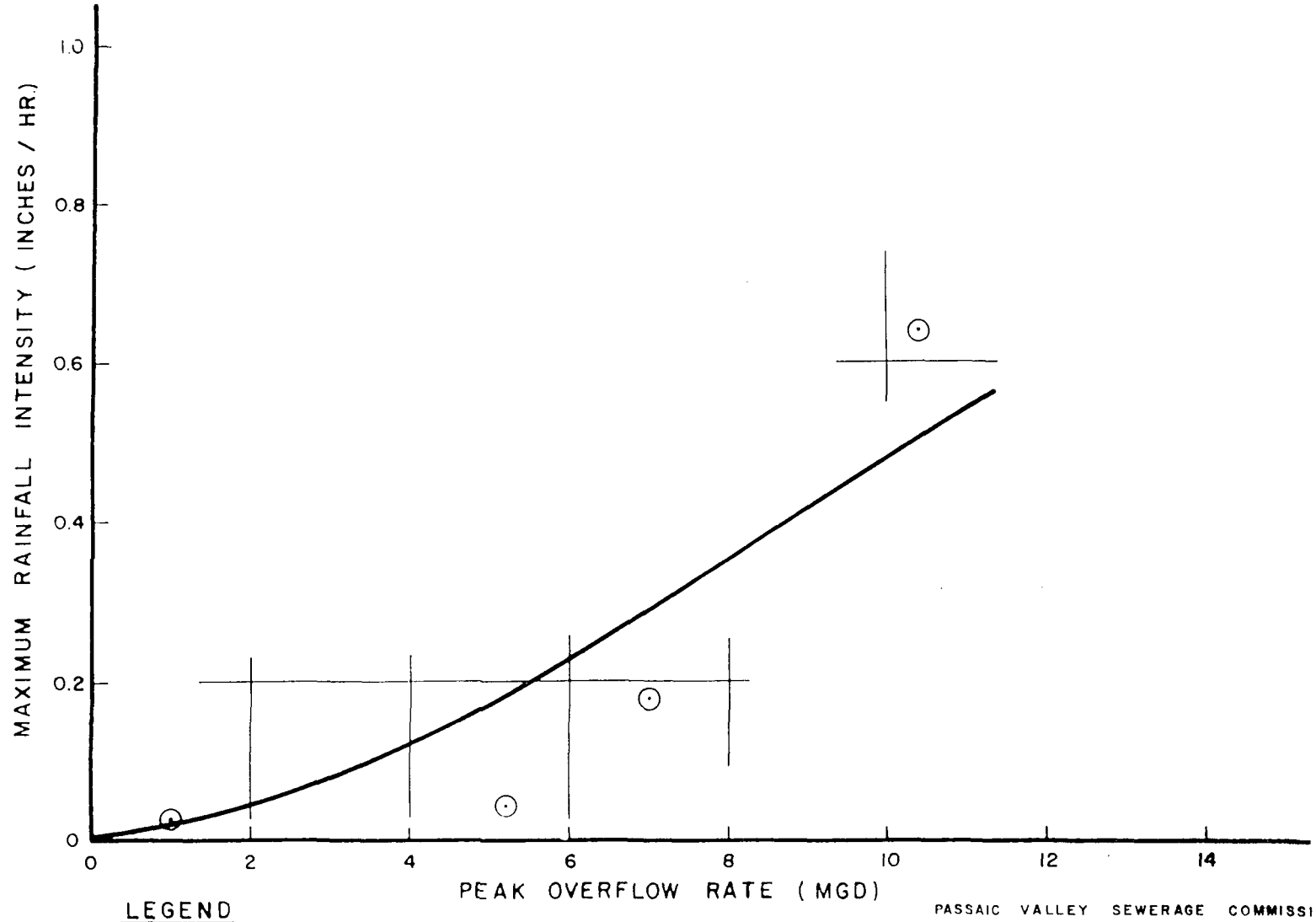
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE E

946200095



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC STREET, NEWARK

MAXIMUM RAINFALL INTENSITY

VS.

PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers 46 ESSEX STREET, MILLBURN, NEW JERSEY 07041

PLATE F

946200096

PVSC Reference # G-115

Date: 7/11/75

Elson T. Killam Associates - Infiltration Studies

Chamber #033/N-006C

Passaic Street, Newark - Sandcatcher
7/9/75 Times to be determined

Sampler # 349
Set # 48
BASELINE

6 SAMPLES Overflow occured during non-rain conditions.

SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC/COD%	BOD	BOD/COD%
1	6.6	66	45	68.2	432	145	33.6	285	66.0
2	6.8	66	35	76.2	283	84	29.6	150	53.0
3	6.8	84	59	70.3	412	140	34.0	250	60.7
4	6.5	101	67	66.3	497	150	30.2	324	65.2
5	6.6	74	46	62.2	428	135	31.5	276	64.5
6	6.8	71	58	81.7	234	69	29.5	99	42.3
							31.4		58.6

PVSC Reference # K-125

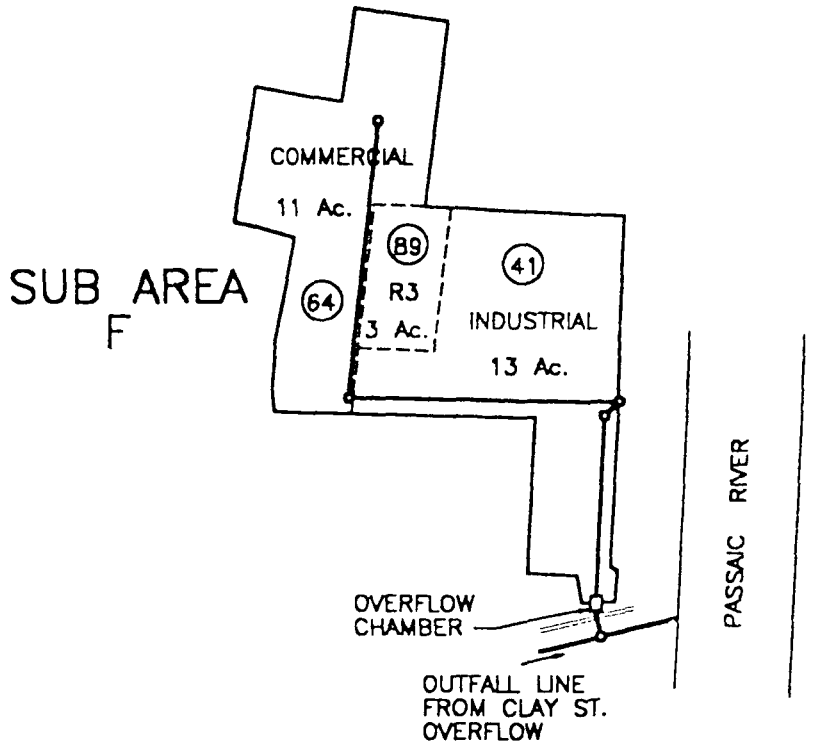
Date: 11/13/75

Elson T. Killam Associates - Infiltration Studies
Passaic St., Newark - Sandcatcher
10:45 - 11/11/75 to 10:45 - 11/12/75

Chamber # 033/N-006C
Sampler # 322
Set # 56

	22 SAMPLES							BASELINE	
SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC/COD%	BOD	BOD/TOC%
1	7.5	88	58	65.7	140	60	42.8	74	52.8
2	7.9	138	84	60.8	268	76	28.3	42	55.3
3	7.9	42	42	100.0	252	60	22.9	71	28.1
4	8.1	72	44	61.2	200	57	28.5	57	28.5
5	8.0	68	46	67.7	176	66	37.5	65	36.9
6	7.9	48	26	54.3	224	76	33.9	155	69.3
7	8.2	76	48	63.2	240	68	28.3	191	79.2
8	8.1	50	36	72.0	316	76	24.0	159	50.4
9	8.1	112	62	55.3	192	96	50.0	-	-
10	8.1	94	44	46.8	184	64	34.7	90	48.9
11	8.1	80	38	47.5	180	68	37.8	24	13.3
12	8.0	84	24	28.6	168	44	26.4	12	7.1
13	8.2	86	56	65.2	212	56	26.4	80	37.7
14	8.2	116	44	37.9	188	60	31.9	51	27.1
15	8.2	240	108	45.0	392	75	19.1	48	12.2
16	10.0	92	40	43.5	196	72	36.7	54	27.5
17	NO SAMPLE								
18	8.9	84	50	59.5	208	56	26.9	48	23.0
19	8.6	94	66	70.2	152	45	29.6	17	11.2
20	8.4	88	32	36.4	136	45	33.1	22	16.2
21	8.2	66	46	69.7	156	52	33.3	18	11.5
22	8.0	106	62	58.5	172	45	26.1	16	9.3
23	9.8	190	108	56.9	308	112	36.4	13	42.2
						Average	31.6		32.7

LAND USE	%	ACRES
R3	11	3
R2	---	---
R1	---	---
OPEN SPACE	---	---
INDUSTRIAL	48	13
COMMERCIAL	41	11
TOTAL	100	27



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- □ REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
PASSAIC STREET OVERFLOW
CITY OF NEWARK

Killam
Associates & Consulting Engineers

FIGURE N-006C

946200099

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

ORANGE STREET, NEWARK
N-007

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY 07041

ORANGE STREET OVERFLOW CHAMBER

The Orange Street overflow serves a drainage area of approximately 13 acres. The dry weather flow in the collection system was found to be negligible and no measurements were made.

Metering was not conducted at this chamber and observations made during storms indicated no overflow that could be measured.

Samples taken of the flow during dry weather flow periods indicated that suspended solids ranged from less than 10 mg/1 to only about 72 mg/1, with one reading of 164 mg/1. Dry weather BOD values ranged from less than 10 mg/1 to only about 36 mg/1. These concentrations are indicative of very dilute sewage.

Samples taken of the storm water flow in the pipeline showed the BOD to average only 26 mg/1 and the suspended solids to average less than 100 mg/1. This district is relatively small and the overflow can, in effect, be eliminated.

OVERFLOW DATA EXTRACT

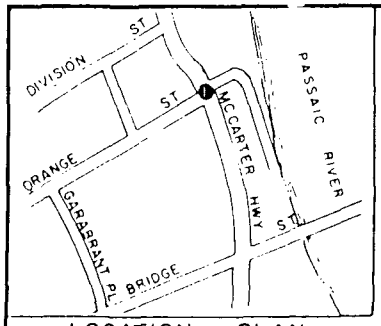
ORANGE STREET OVERFLOW CHAMBER

NEWARK

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	primarily residential with some (15 percent) industrial flow
Overflow Location (See Plate A):	at intersection of McCarter Highway and Orange Street
District Outlet Sewer (See Plates A and B):	15" diameter VTP sewer
Outfall to River (See Plates A and B):	24" x 24" rounded square brick sewer
Outfall Condition:	obstructed: Outfall charged with water from fire hose at chamber, but no flow observed at outfall point.
Tidal Effects:	none observed
Surcharge Effects:	none evident
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.

NOTE: overflow estimated based on outfall pipe capacity



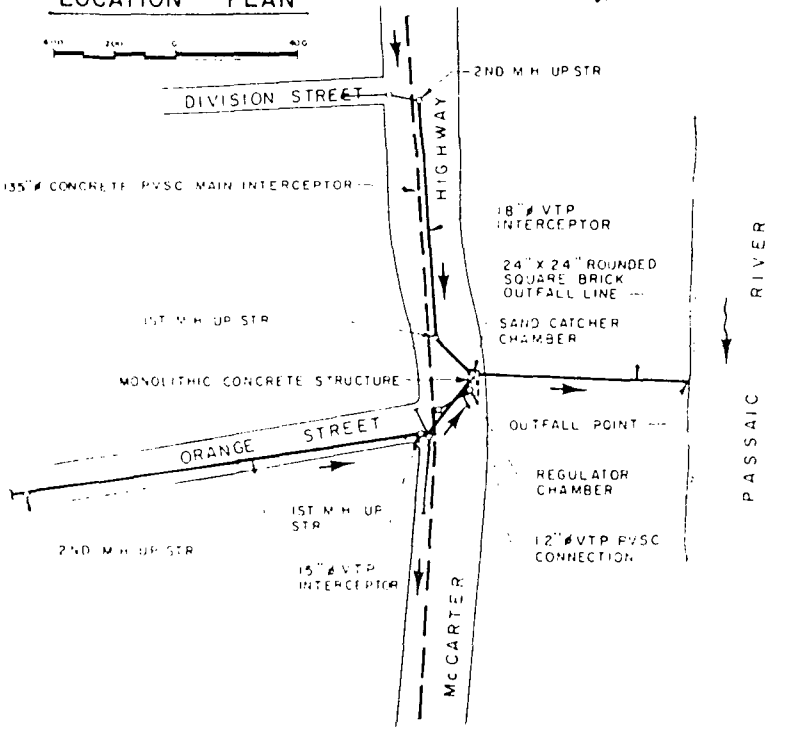
LOCATION PLAN

NOTE

ALL SIDE PIPELINES EXCEPT PVSC MAIN INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY

LEGEND:

→ DIRECTION OF FLOW
S C = SAND CATCHER
T G = TIDE GATE
UP STR. = UP STREAM
DN. STR. = DOWN STREAM
N T S = NOT TO SCALE
V T P = VITRIFIED TILE PIPE
● = OVERFLOW LOCATION

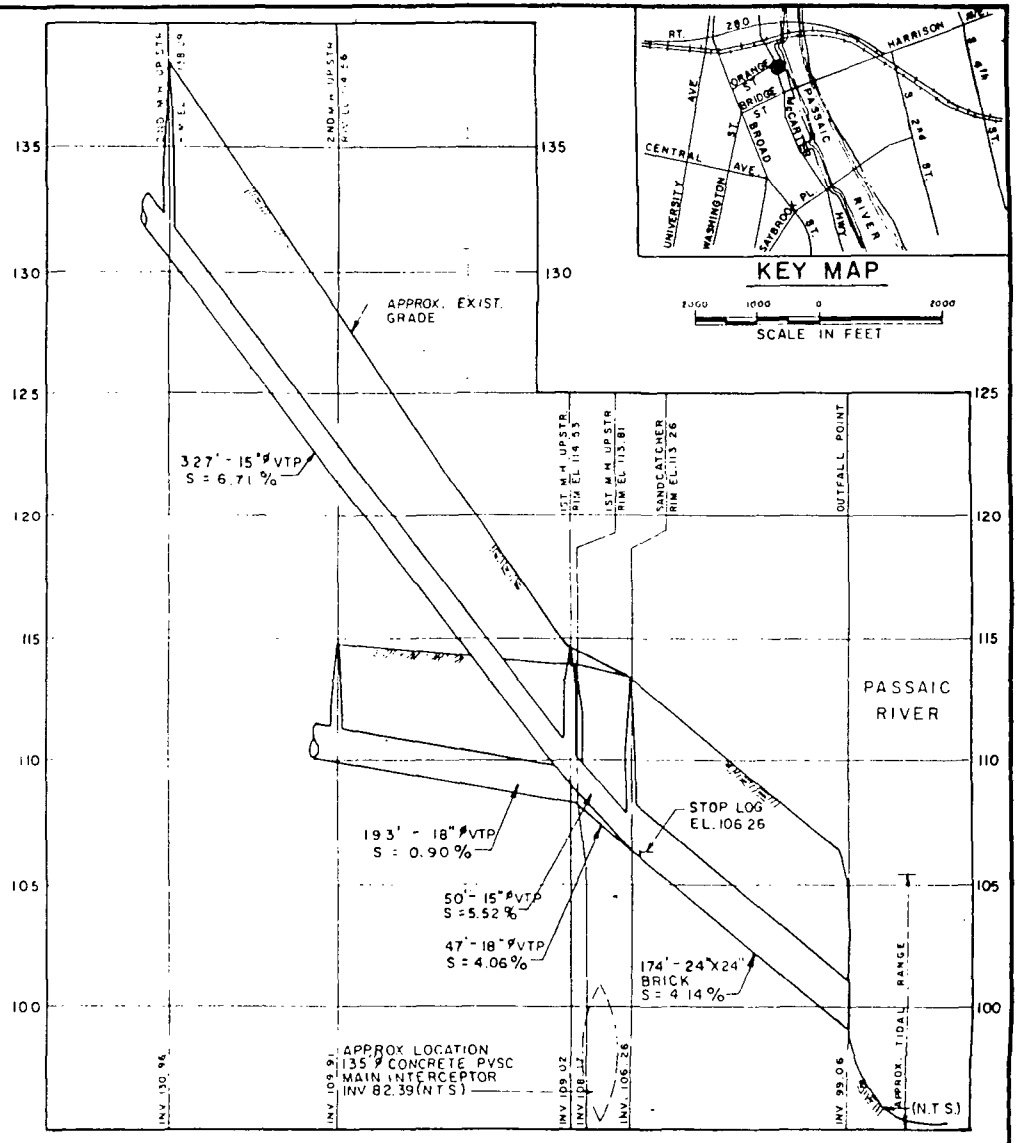


PLAN

SCALE IN FEET

ALL ELEVATIONS BASED ON B.M. NO 9858 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

946200103



PROFILE

SCALE IN FEET

SCALE IN FEET

KEY MAP

SCALE IN FEET

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER N-007

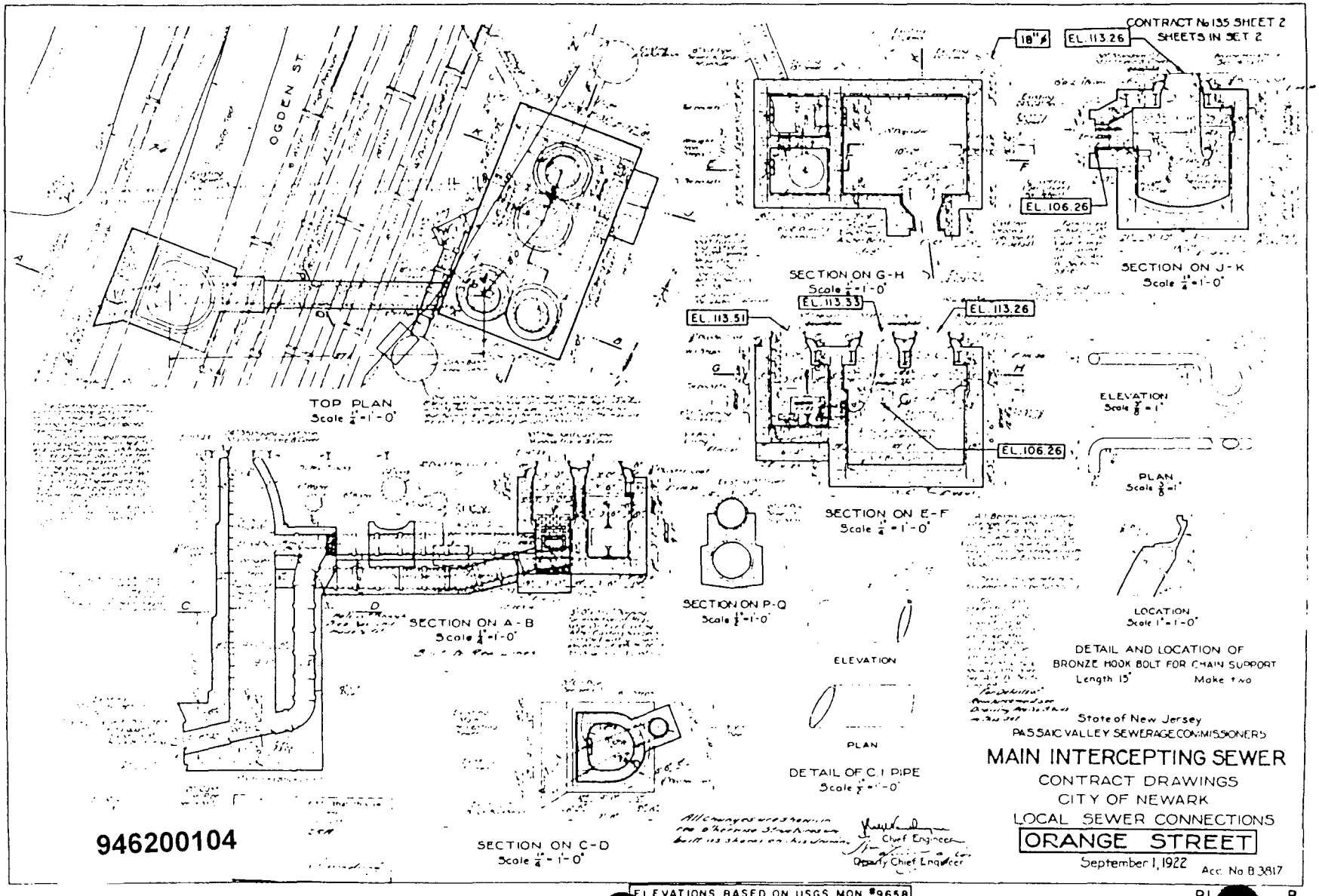
ORANGE STREET, NEWARK

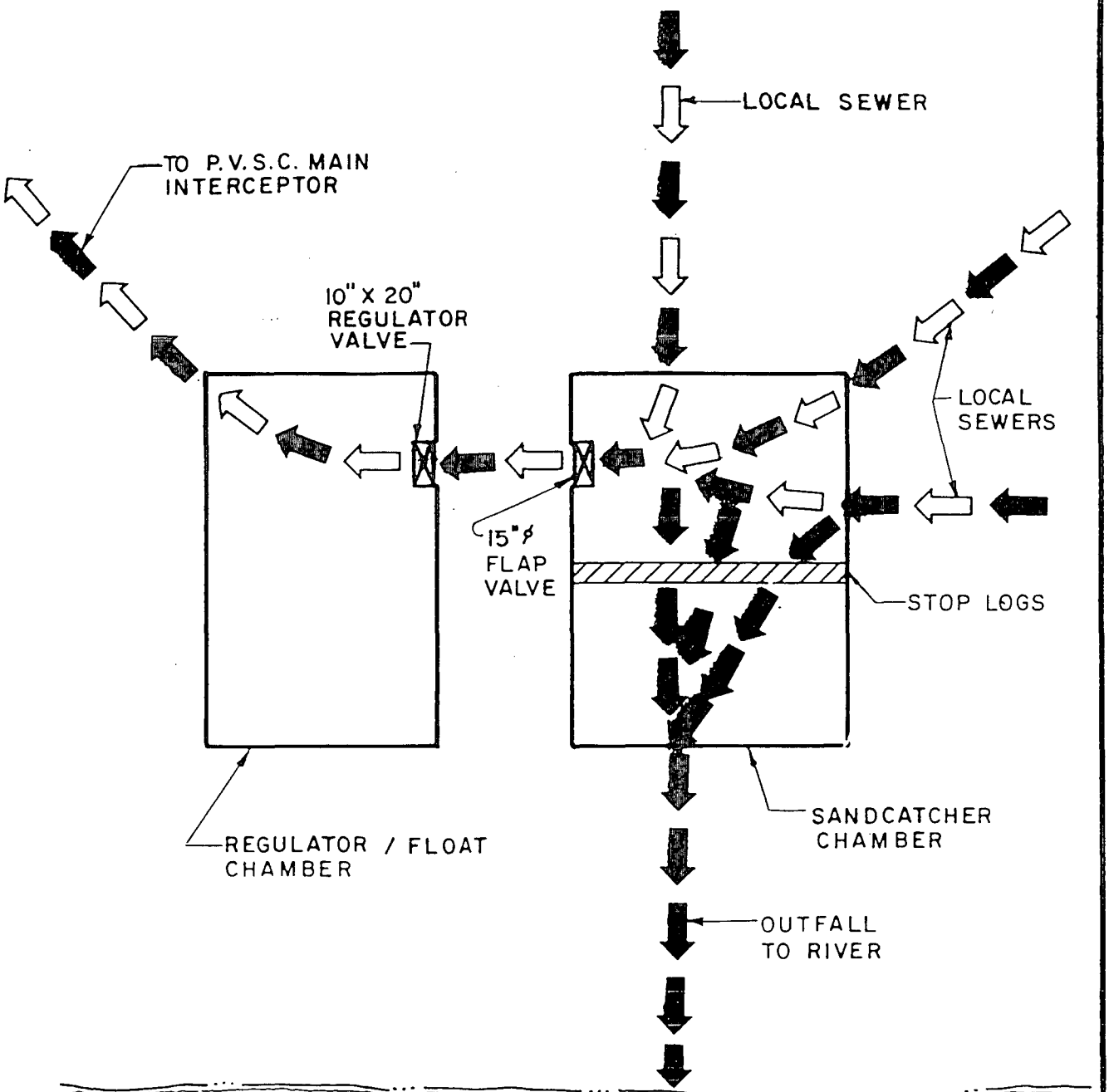
PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE A


CONTRACT No 135 SHEET 2
SHEETS IN SET 2
OGDEN ST
18"ø
EL. 113.26
EL. 106.26
SECTION ON J-K
Scale 1/4"=1'-0"
SECTION ON G-H
Scale 1/4"=1'-0"
EL. 113.51
EL. 113.33
EL. 113.26
EL. 106.26
TOP PLAN
Scale 1/4"=1'-0"
ELEVATION
Scale 3/8"=1"
PLAN
Scale 3/8"=1"
SECTION ON E-F
Scale 1/4"=1'-0"
SECTION ON P-Q
Scale 1/4"=1'-0"
SECTION ON A-B
Scale 1/4"=1'-0"
LOCATION
Scale 1"=1'-0"
DETAIL AND LOCATION OF
BRONZE HOOK BOLT FOR CHAIN SUPPORT
Length 15" Make two
ELEVATION
PLAN
DETAIL OF C.I. PIPE
Scale 1/2"=1'-0"
SECTION ON C-D
Scale 1/4"=1'-0"
946200104
Chief Engineer
Deputy Chief Engineer
State of New Jersey
PASSAIC VALLEY SEWERAGE COMMISSIONERS
MAIN INTERCEPTING SEWER
CONTRACT DRAWINGS
CITY OF NEWARK
LOCAL SEWER CONNECTIONS
ORANGE STREET
September 1, 1922
Acc. No B 3817
ELEVATIONS BASED ON USGS MON. #9658



LEGEND

DRY WEATHER FLOW

STORM FLOW/OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

ORANGE STREET, NEWARK

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE C

946200105

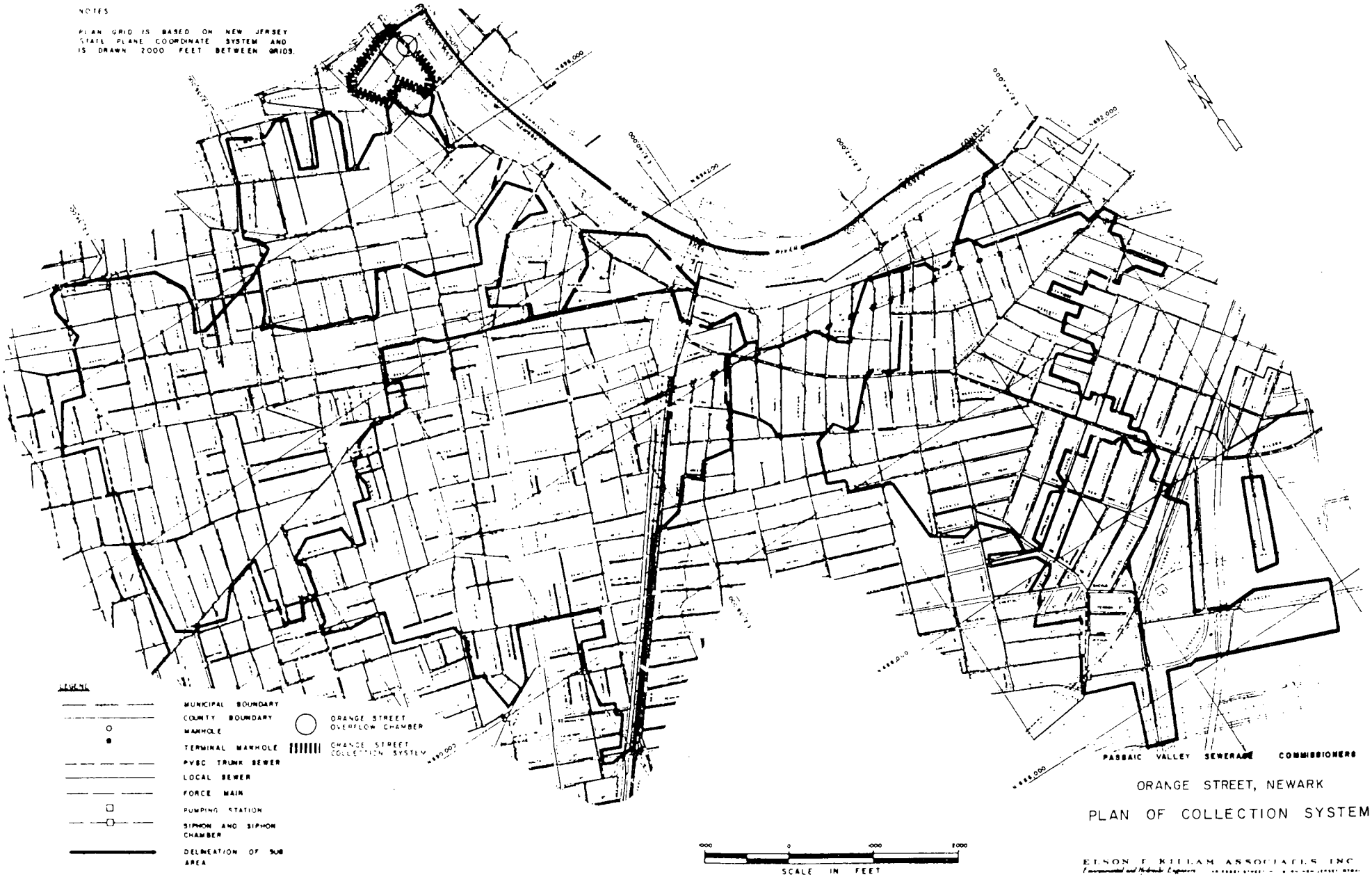
ORANGE STREET OVERFLOW CHAMBER N-007 (Continued)

Condition of Regulator:	appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	No stop logs present in chamber
Tide Gate Condition:	No tide gate chambers exist for this location due to higher elevation with respect to Passaic River

Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.020 square miles- 13 acres
Average Daily Flow	
Seasonal Dry Weather:	insignificant
Seasonal Wet Weather:	insignificant
Estimated Combined Flow to Produce an Overflow:	4.8 MGD
Approximate Length of Combined Sewers Serving District:	1,900 linear feet


NOTES
PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS DRAWN 2000 FEET BETWEEN GRIDS.
LEGEND
MUNICIPAL BOUNDARY
COUNTY BOUNDARY
MANHOLE
TERMINAL MANHOLE
PVSC TRUNK SEWER
LOCAL SEWER
FORCE MAIN
PUMPING STATION
SIPHON AND SIPHON CHAMBER
DELINEATION OF SUB AREA
ORANGE STREET OVERFLOW CHAMBER
CHANCE STREET COLLECTION SYSTEM
PASSAIC VALLEY SEWERAGE COMMISSIONERS
ORANGE STREET, NEWARK
PLAN OF COLLECTION SYSTEM
SCALE IN FEET
ELSON T. KILLAM ASSOCIATES, INC.
PLATE D

946200107

PVSC Reference # H-116

Date: 8-12-75

Elson T. Killam Associates - Infiltration Studies
Orange Street, Newark, N.J. - Sandcatcher
10:15 - 8/4/75 to 10:15 - 8/5/75

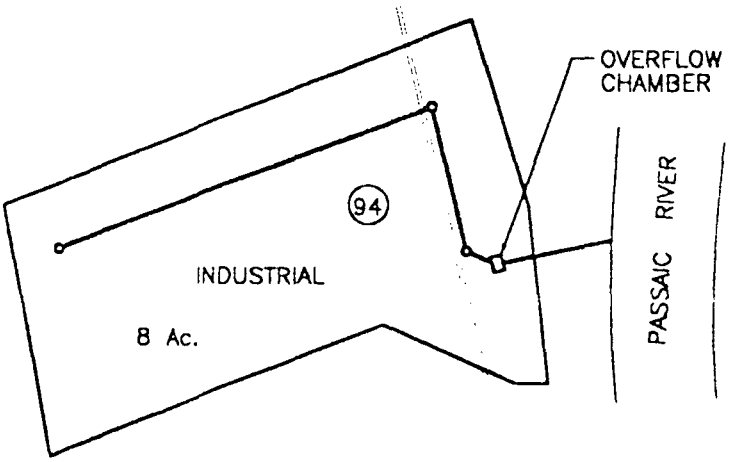
Sampler No. 308
Set No. 34
Chamber No. 034/N-007

23 SAMPLES — BASELINE

SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC/COD %	BOD	BOD/TOC %
1	6.9	72	60	83.5	130	48	36.9	36	75.2
2	Broken Bottle		-	-	-	-	-	-	-
3	7.3	48	38	79.3	79	29	36.7	26	32.9
4	7.1	34	28	82.4	55	23	41.8	21	38.2
5	7.0	64	50	78.2	87	30	34.5	26	29.9
6	6.7	52	48	92.3	99	37	37.4	33	33.3
7	6.9	42	28	66.7	67	23	34.4	29	43.3
8	7.1	26	26	100.0	28	14	50.0	12	42.9
9	7.1	24	24	100.0	24	13	54.2	7	34.3
10	7.2	10	10	100.0	20	9	45.0	3	15.0
11	7.3	18	18	100.0	12	8	66.7	4	33.3
12	7.2	14	14	100.0	20	8	40.0	4	20.0
13	No Sample		-	-	-	-	-	-	-
14	6.7	164	156	95.2	297	10	37.1	39	13.1
15	6.8	44	40	91.0	127	46	36.2	4	3.1
16	6.9	16	16	100.0	63	26	41.3	30	47.7
17	7.2	8	-	-	48	20	41.7	13	27.1
18	7.2	4	-	-	44	15	34.1	6	13.6
19	7.3	2	-	-	32	12	37.5	3	9.4
20	7.5	6	-	-	20	9	45.0	8	40.0
21	7.3	8	-	-	16	8	50.0	7	22.9
22	7.3	24	24	100.0	20	8	40.0	9	45.0
23	7.3	22	22	100.0	32	11	34.4	10	31.3
24	7.0	24	24	100.0	40	15	37.5	15	37.5
							41.5		31.3

946200108

LAND USE	%	ACRES
R3	---	---
R2	---	---
R1	---	---
OPEN SPACE	---	---
INDUSTRIAL	100	8
COMMERCIAL	---	---
TOTAL	100	8



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- □ REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
ORANGE STREET OVERFLOW
CITY OF NEWARK

Killam
Associates & Consulting Engineers

FIGURE N-007

946200109

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

BRIDGE STREET, NEWARK
N-008

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY 07041

BRIDGE STREET OVERFLOW CHAMBER

The Bridge Street overflow serves a tributary area of approximately 10 acres. While this district was served initially with a combined sewer system, separation by the installation of storm sewers in this district has resulted in a condition where no overflow now occurs.

The theoretical average daily flow in this area was found to be essentially negligible. Likewise, the average daily flow under dry weather conditions was found to be so low that it could not be measured accurately.

Metering facilities were installed in this chamber during the period June 5, 1975, through August 6, 1975. During this time, rainfall occurred on at least 16 occasions. The rainfall intensity was particularly severe during the period of observation, namely, ranging from 0.3 inches per hour to as high as 1.3 inches per hour. Despite this severe rainfall, no overflow occurred at any time during the study and observation of this chamber. Consequently, with no overflow, no sampling of any overflow was possible.

Sampling of the dry weather flow indicated that suspended solids ranged from less than 10 mg/l to 404 mg/l with BOD concentrations ranging from about 25 mg/l to about 423 mg/l.

Sampling was undertaken of the flow in the system sewer to determine the wastewater characteristics during storm flow conditions. The results indicate that the BOD averaged 153 mg/l, and that the suspended solids averaged 275 mg/l. This range of values would appear to be indicative of the fact that very little storm water inflow is entering the system at the present time. This district is relatively small and the overflow can, in effect, be eliminated.

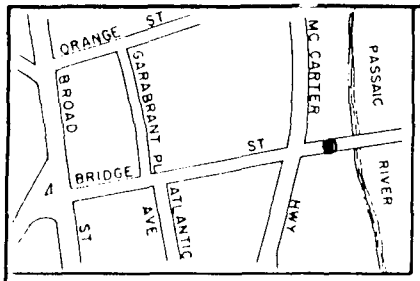
OVERFLOW DATA EXTRACT

BRIDGE STREET OVERFLOW CHAMBER

NEWARK

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	residential, with some industrial flow
Overflow Location (See Plate A):	in Bridge Street just before westerly end of Bridge St. bridge
District Outlet Sewer (See Plates A and B):	15" diameter VTP sewer
Outfall to River (See Plates A and B):	15" diameter VTP sewer
Outfall Condition:	clear to outfall point
Tidal Effects:	none observed
Surcharge Effects:	none evident
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.



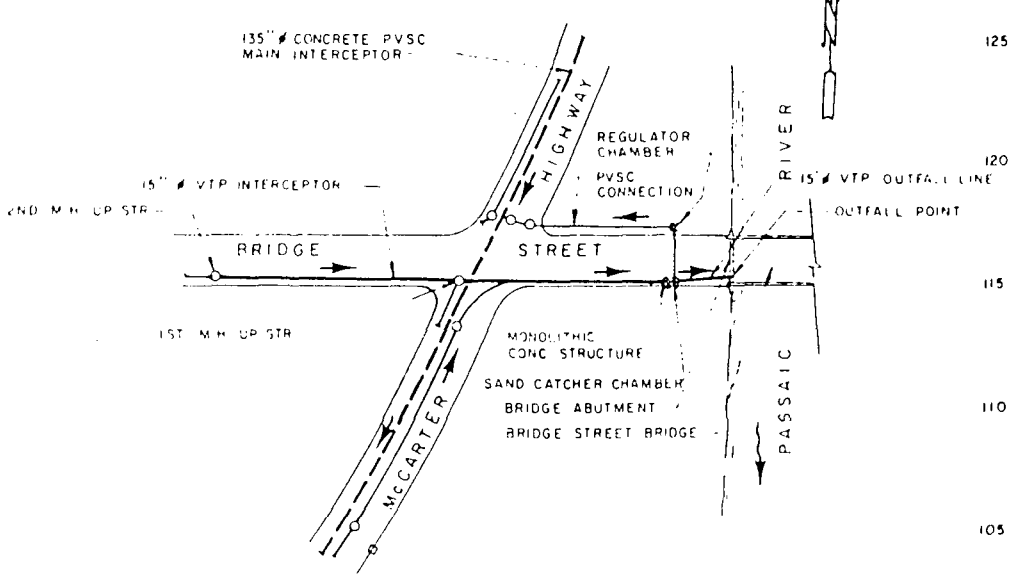
LOCATION PLAN

SCALE IN FEET

NOTE
ALL SIDE PIPELINES EXCEPT PVSC MAIN INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY

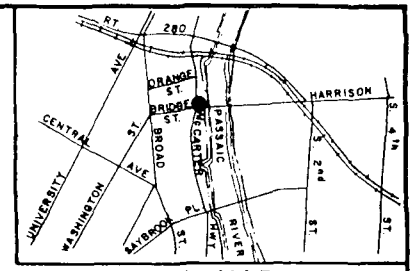
LEGEND

→ DIRECTION OF FLOW
S.C. : SAND CATCHER
T.G. : TIDE GATE
UP STR : UP STREAM
DN STR : DOWN STREAM
N.T.S : NOT TO SCALE
V.T.P : VITRIFIED TILE PIPE
● : OVERFLOW LOCATION



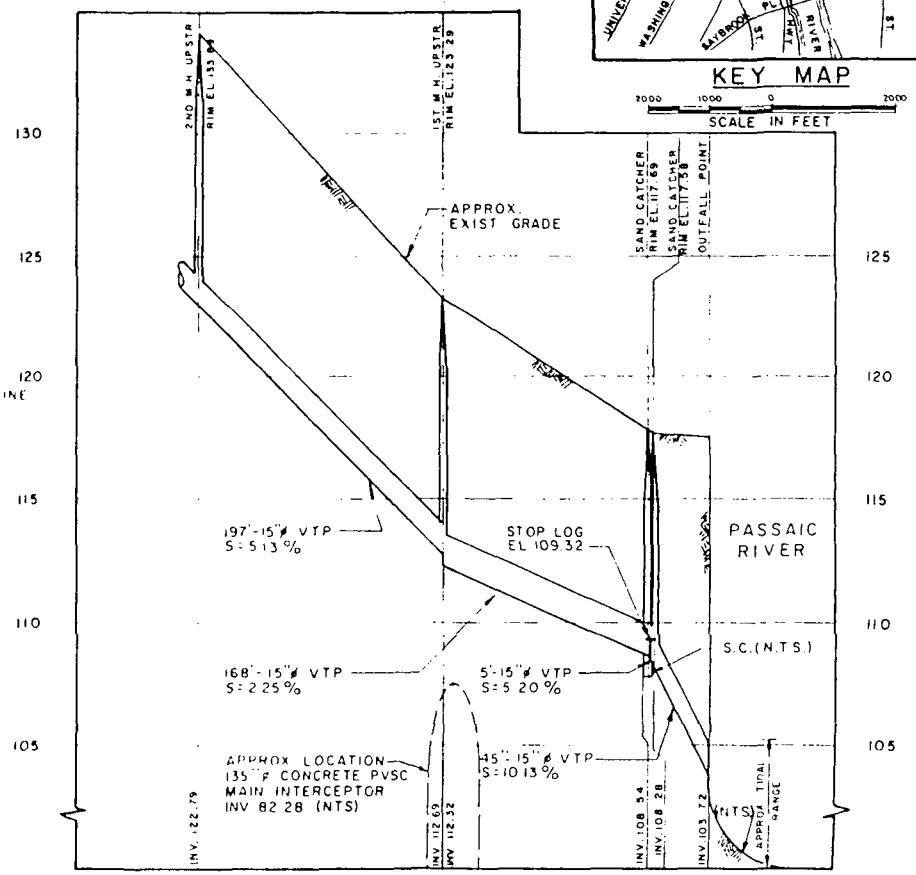
PLAN

SCALE IN FEET



KEY MAP

SCALE IN FEET



PROFILE

HORIZ SCALE IN FEET

VERT. SCALE IN FEET

ALL ELEVATIONS BASED ON B.M. N° 9658 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER N-008

BRIDGE STREET, NEWARK

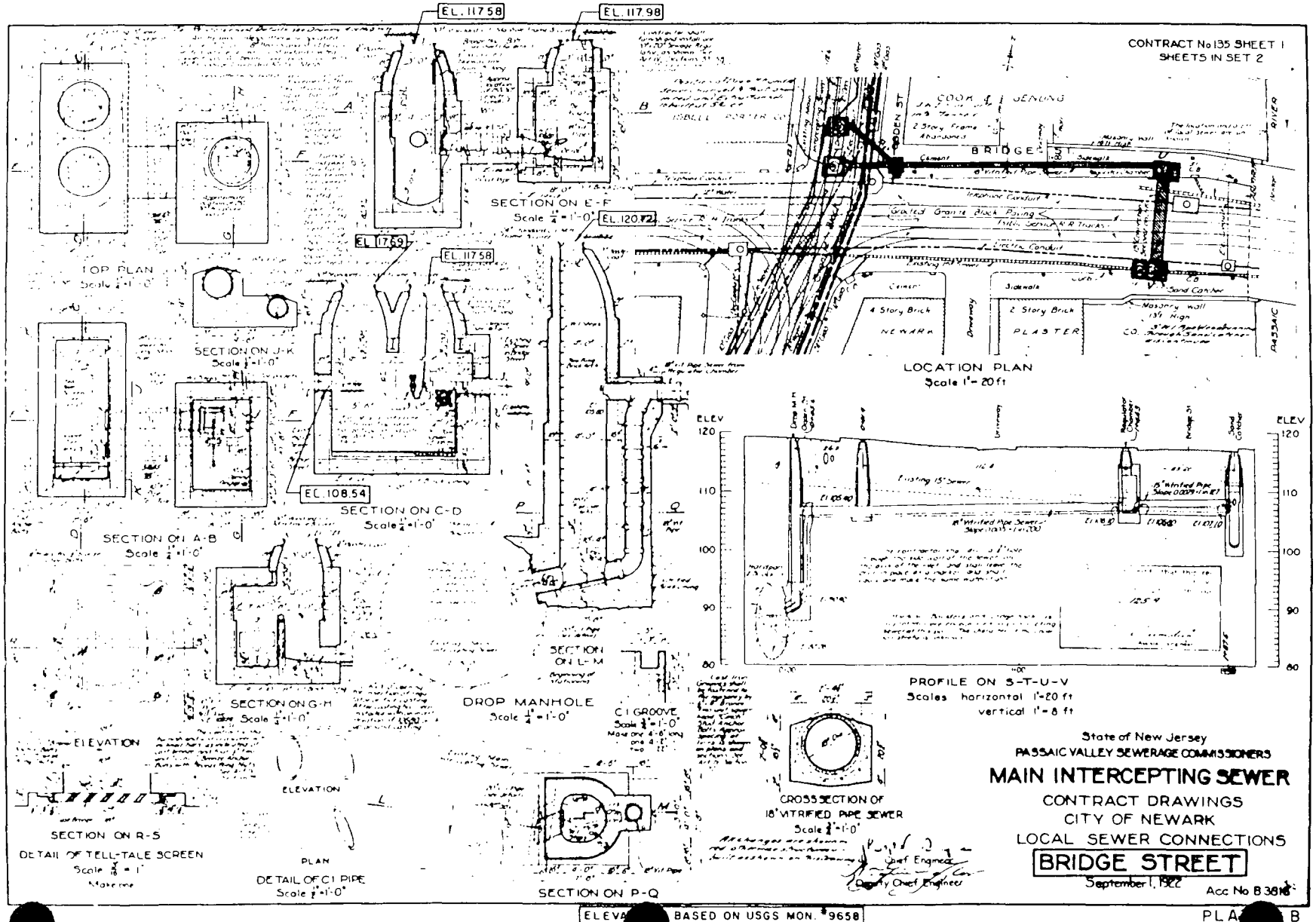
PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

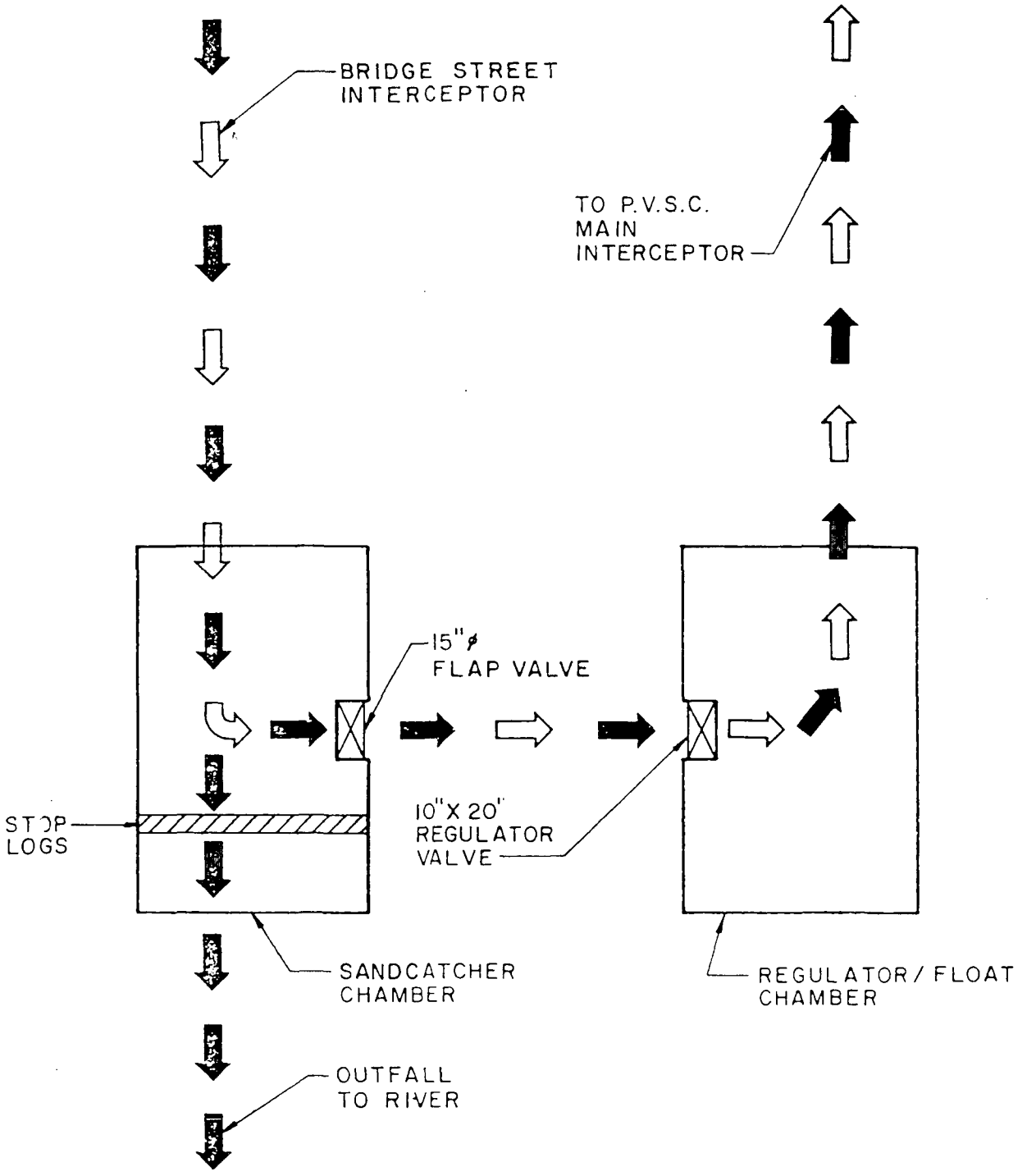
PLATE A

946200113


EL. 117.58
EL. 117.98
EL. 117.59
EL. 117.58
EL. 120.72
EL. 108.54
SECTION ON E-F
Scale 1/4"=1'-0"
TOP PLAN
SECTION ON J-K
SECTION ON C-D
Scale 1/4"=1'-0"
SECTION ON A-B
Scale 1/4"=1'-0"
SECTION ON G-H
Scale 1/4"=1'-0"
SECTION ON L-M
DROP MANHOLE
Scale 1/4"=1'-0"
CI GROOVE
ELEVATION
ELEVATION
SECTION ON R-S
DETAIL OF TELL-TALE SCREEN
Scale 1/8"=1'
PLAN
DETAIL OF CI PIPE
Scale 1/2"=1'-0"
SECTION ON P-Q
CONTRACT No 135 SHEET 1
SHEETS IN SET 2
BRIDGE ST
BRIDGE
COOK & JENKINS
4 Story Brick
NEWARK
2 Story Brick
PLASTER
Masonry Wall
Granite Block Paving
Sand Cushion
Sidewalk
Conduit
LOCATION PLAN
Scale 1"=20 ft
ELEV
120
110
100
90
80
PROFILE ON S-T-U-V
Scales horizontal 1"=20 ft
vertical 1"=8 ft
CROSS SECTION OF
18" VITRIFIED PIPE SEWER
Scale 1/2"=1'-0"
State of New Jersey
PASSAIC VALLEY SEWERAGE COMMISSIONERS
MAIN INTERCEPTING SEWER
CONTRACT DRAWINGS
CITY OF NEWARK
LOCAL SEWER CONNECTIONS
BRIDGE STREET
September 1, 1922
Acc No B 3818
Chief Engineer
County Chief Engineer
ELEVATIONS BASED ON USGS MON. #9658
PLAN B

(3)

946200114



PASSAIC VALLEY SEWERAGE COMMISSIONERS

BRIDGE STREET, NEWARK

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

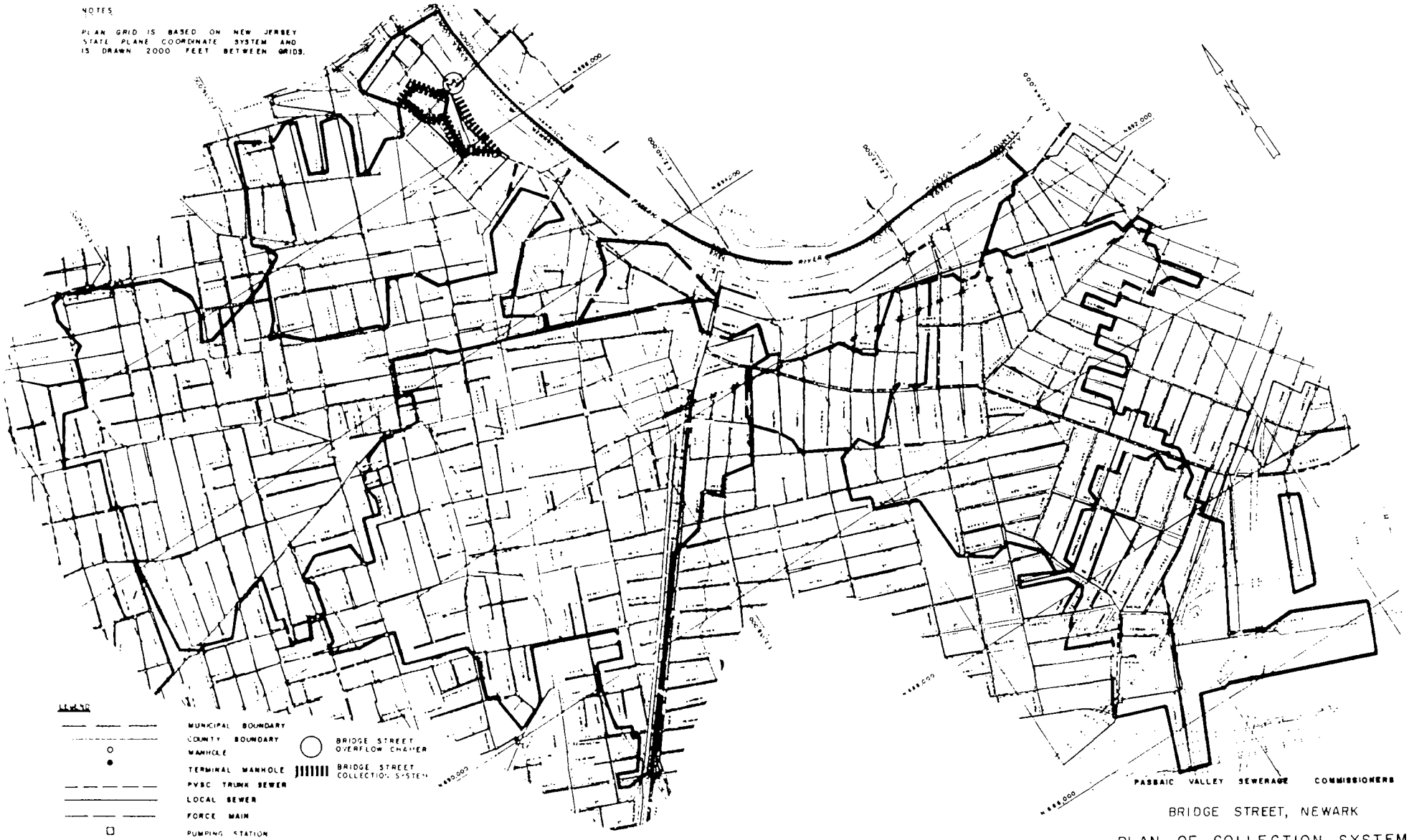
BRIDGE STREET OVERFLOW CHAMBER N-008 (Cont'd.)

Condition of Regulator:	appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	stop log located in sand catcher just ahead of opening to outfall line
Tide Gate Condition:	none (no tide gate chambers for this location)

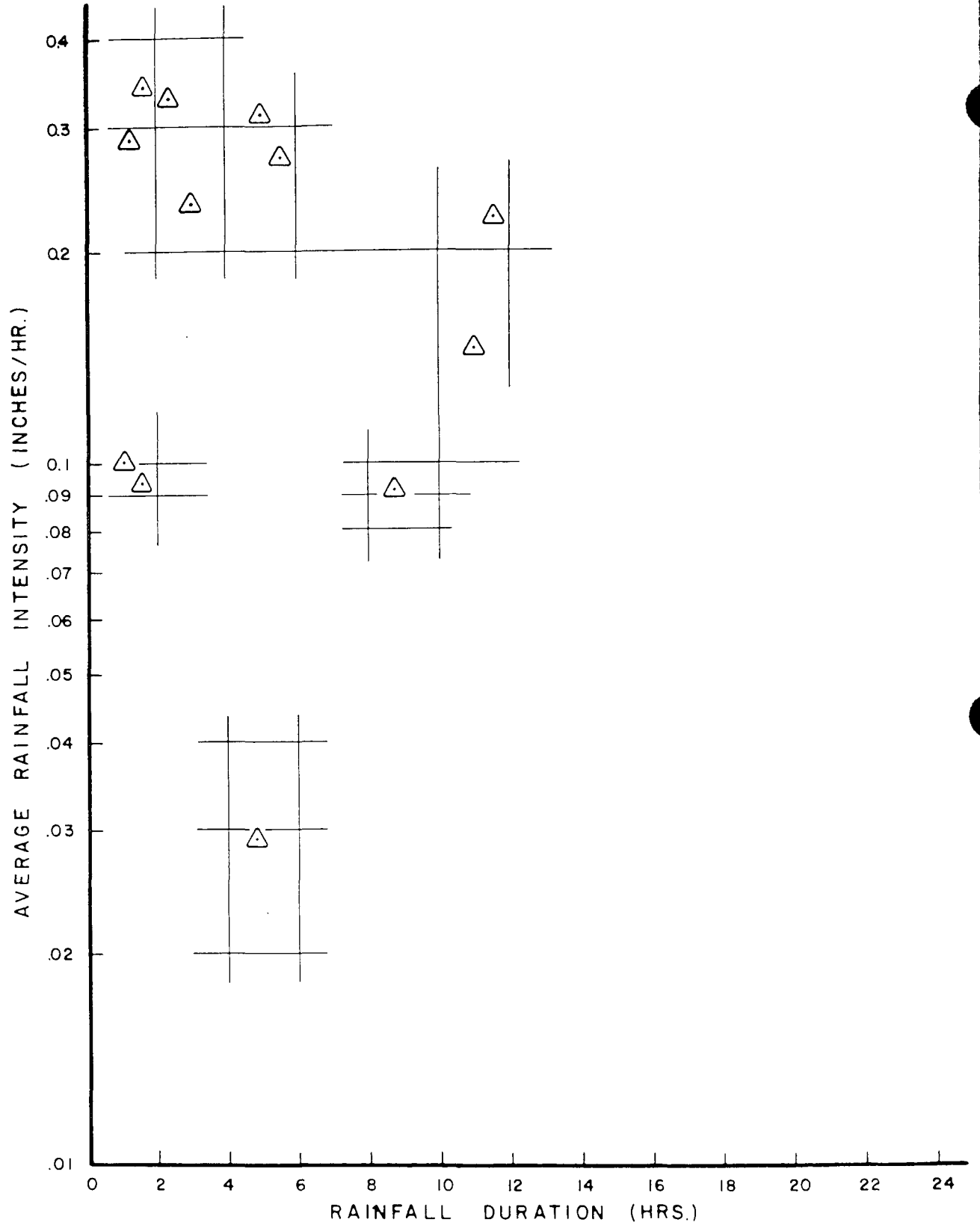
Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.016 square miles-10 acres
Average Daily Flow	
Seasonal Dry Weather:	negligible
Seasonal Wet Weather:	negligible
Estimated Combined Flow to Produce an Overflow:	not estimated-no overflows observed
Approximate Length of Combined Sewers Serving District:	1,100 linear feet


NOTES
PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS DRAWN 2000 FEET BETWEEN GRIDS.
LEGEND
MUNICIPAL BOUNDARY
COUNTY BOUNDARY
MANHOLE
TERMINAL MANHOLE
PVSC TRUNK SEWER
LOCAL SEWER
FORCE MAIN
PUMPING STATION
SIPHON AND SIPHON CHAMBER
DELINEATION OF SUB AREA
BRIDGE STREET OVERFLOW CHAMBER
BRIDGE STREET COLLECTION SYSTEM
PASSAIC VALLEY SEWERAGE COMMISSIONERS
BRIDGE STREET, NEWARK
PLAN OF COLLECTION SYSTEM
SCALE IN FEET
ELSON T. KILLAM ASSOCIATES, INC.
PLATE D

946200117



LEGEND

△ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

BRIDGE STREET, NEWARK

AVERAGE RAINFALL INTENSITY

VS.

RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE E

946200118

P.V.S.C. Reference # K-33

Date November 8, 1974

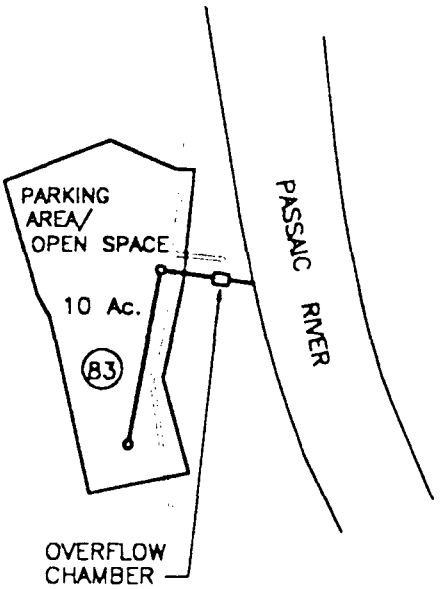
Elson Killam Associates-Infiltration Studies
Bridge Street, Newark-First Manhole Upstream from Sandcatcher-
12:35 P.M., 11/7/74 to 10:40 A. M., 11/8/74
21 Samples

BASELINE

Sample #	pH	T.S.S.	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C./C.O.D.	B.O.D/B.O.D	B.O.D/C.O.D.
1	6.8	120	106	88.3	432	144	33.3	289	66.9
½ fill 2	7.0	170	140	82.4	632	215	34.0	423	66.9
3	N O	SAMPLE							
4	6.9	86	60	69.8	240	102	42.5	159	66.3
5	7.6	404	326	80.7	532	188	35.3	327	61.5
6	6.9	122	100	82.0	592	195	32.9	390	65.9
7	6.1	82	70	85.4	384	117	30.5	223	58.1
8	6.5	68	60	88.2	352	144	40.9	198	56.3
9	6.9	62	56	90.3	388	156	40.2	282	72.7
10	7.1	86	76	89.4	596	200	33.6	195	32.7
11	7.6	10	10	100.0	424	120	28.3	363	85.6
12	7.5	12	12	100.0	268	96	35.8	287	--
½fill 13	7,3	48	40	83.3	324	120	37.0	247	76.2
½fill 14	7.4	40	30	75.0	284	94	33.1	178	62.8
15	7.5	16	6	37.5	128	45	35.1	85	66.4
16	7.6	6	6	100.0	64	24	37.5	43	67.2
17	7.7	6	6	100.0	44	15	34.1	29	65.9
18	7.6	2	2	100.0	40	12	30.0	25	62.5
19	7.6	4	4	100.0	52	42	*80.1	38	73.1
20	7.5	12	12	100.0	208	80	38.5	130	62.5
21	7.5	30	24	80.0	160	63	39.4	120	75.0
22	N O	S A M P L E							
½ fill 23	7.6	80	60	75.0	384	162	42.2 35.7	264	68.8 65.7

* NOT INCLUDED IN AVERAGE

LAND USE	%	ACRES
R3	---	---
R2	---	---
R1	---	---
OPEN SPACE	---	---
INDUSTRIAL	---	---
COMMERCIAL	100	10
TOTAL	100	10



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- □ REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
BRIDGE STREET OVERFLOW
CITY OF NEWARK

Killam
Associates • Consulting Engineers

FIGURE N-008

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

RECTOR STREET, NEWARK
N-009

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY 07041

RECTOR STREET OVERFLOW CHAMBER

This overflow chamber serves a tributary area of approximately 177 acres. The collection system in this district is a combined sewer. The theoretical average daily flow was found to be 1.3 MGD. Metering of the system flow indicated average daily dry weather flow to be 1.9 MGD. This appears to indicate a relatively constant infiltration rate of about 0.6 MGD year-round.

Metering and sampling facilities were installed in this chamber from January 25, 1975 to August 7, 1975, during which time 48 rainfall occurrences were measured or observed. Thirty-one overflows were measured or observed which is indicative of 65 percent probability of overflow during periods of rainfall. It was further estimated that from 70 to 90 rainfall occurrences are likely in the average year which will cause overflows at this chamber.

The volume of overflow ranged from about 0.1 MG to 7.9 MG. However, by operating the flap gates, this chamber, like others in the City of Newark, is regulated to prevent system surcharge. This gate or valve action results in an increase in the overflow that would occur under automatic operation. However, observations made during our period of study indicated that this was not a controlling factor at this overflow chamber. For example, the overflow measured at 1.9 MGD under automatic operation totaled 2.5 MGD on that occasion as a result of valve control. Peak flow rates were found to be fairly high at this overflow, ranging up to 68 MGD during periods of very intense rainfall.

The Rector Street overflow is sometimes influenced by high tide in the Passaic River. At periods of high tide in the Passaic River coincident with high overflows, a surcharge occurs which limits the outflow from the chamber and tends to increase the flow into the interceptor sewer. It was never observed that surcharge conditions caused infiltration of the Passaic River into this chamber.

Sampling during dry weather periods indicated that suspended solids ranged from 38 mg/l to 410 mg/l, and BOD ranged from a low of 11 mg/l to 189 mg/l.

An analysis of the overflow waste characteristics indicated that the BOD ranged from about 40 mg/l to over 200 mg/l. Samples representative of total suspended solids were obtained in this chamber, and ranged from a low of 42 mg/l to a high of 279 mg/l. It was observed that the overflow was typical and indicative of dilute domestic sewage.

ELSON T. KILLAM ASSOCIATES, INC.

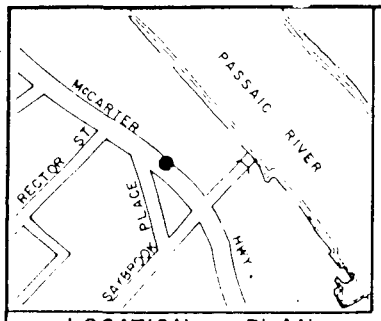
OVERFLOW DATA EXTRACT

RECTOR STREET OVERFLOW CHAMBER

NEWARK

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	primarily industrial with some (20 percent) domestic flow
Overflow Location (See Plate A):	at northwest corner of warehouse on Ogden St., south of intersection of Rector Street and McCarter Highway
District Outlet Sewer (See Plates A and B):	54" X 60" elliptical brick sewer
Outfall to River (See Plates A and B):	60" diameter brick sewer
Outfall Condition:	clear of debris and functioning
Tidal Effects:	none
Surcharge Effects:	none observed
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.

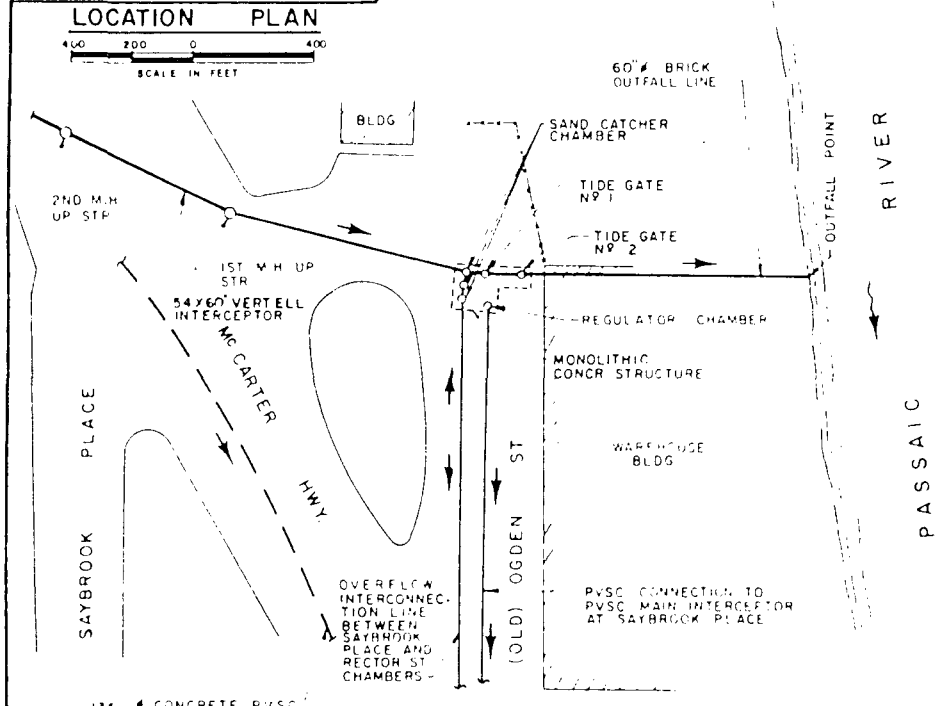


LOCATION PLAN

SCALE IN FEET

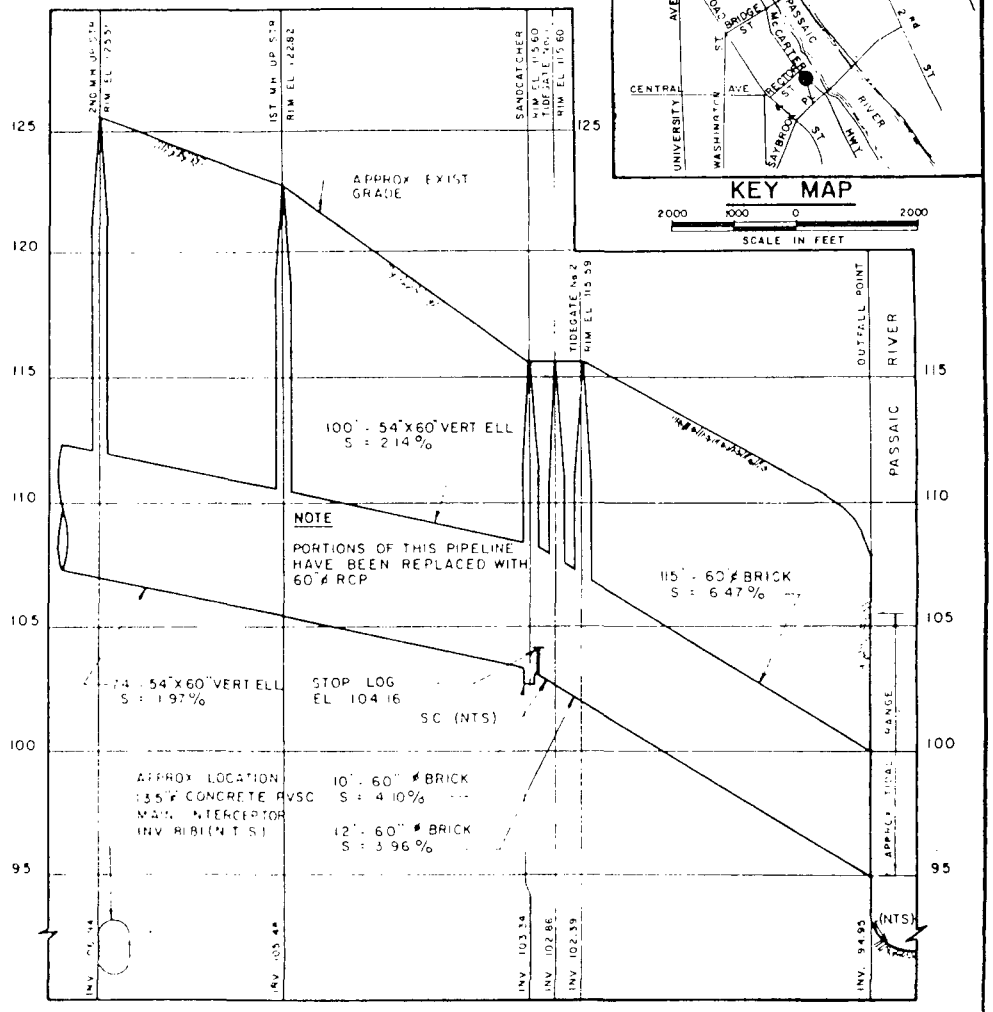
NOTE
ALL SIDE PIPELINES EXCEPT PVSC MAIN INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY

LEGEND
- DIRECTION OF FLOW
- SC : SAND CATCHER
- TG : TIDE GATE
- UP STR : UP STREAM
- DN STR : DOWN STREAM
- NTS : NOT TO SCALE
- ● : OVERFLOW LOCATION



PLAN

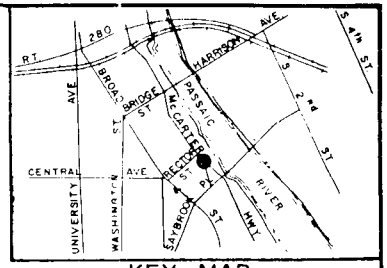
SCALE IN FEET



PROFILE

HORIZONTAL SCALE IN FEET

VERTICAL SCALE IN FEET



KEY MAP

SCALE IN FEET

ALL ELEVATIONS BASED ON B.M. Nº 8455 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

946200125

PASSAIC VALLEY SEWERAGE COMMISSIONER

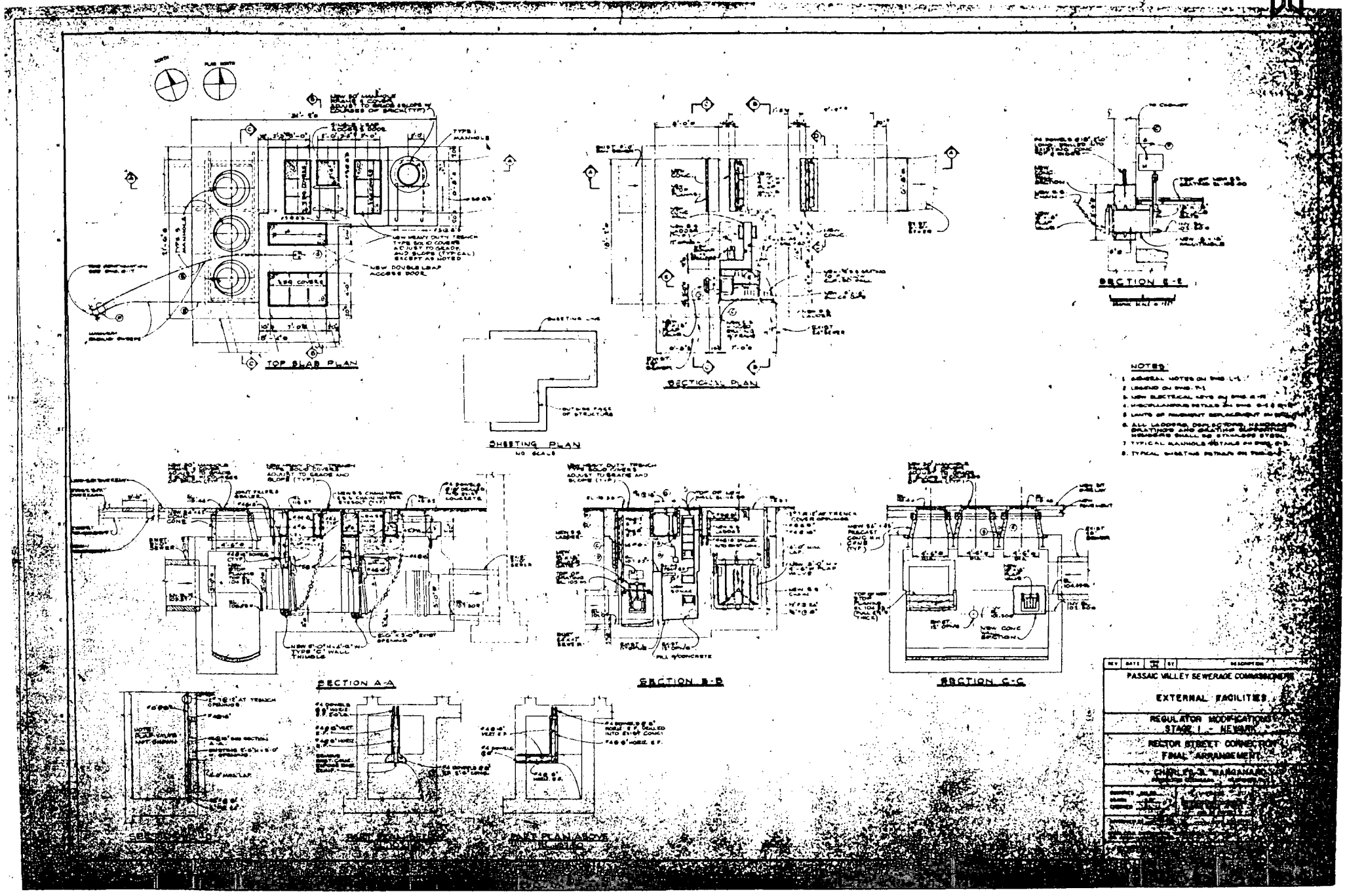
OVERFLOW CHAMBER N-009

RECTOR STREET, NEWARK

PLAN AND PROFILE

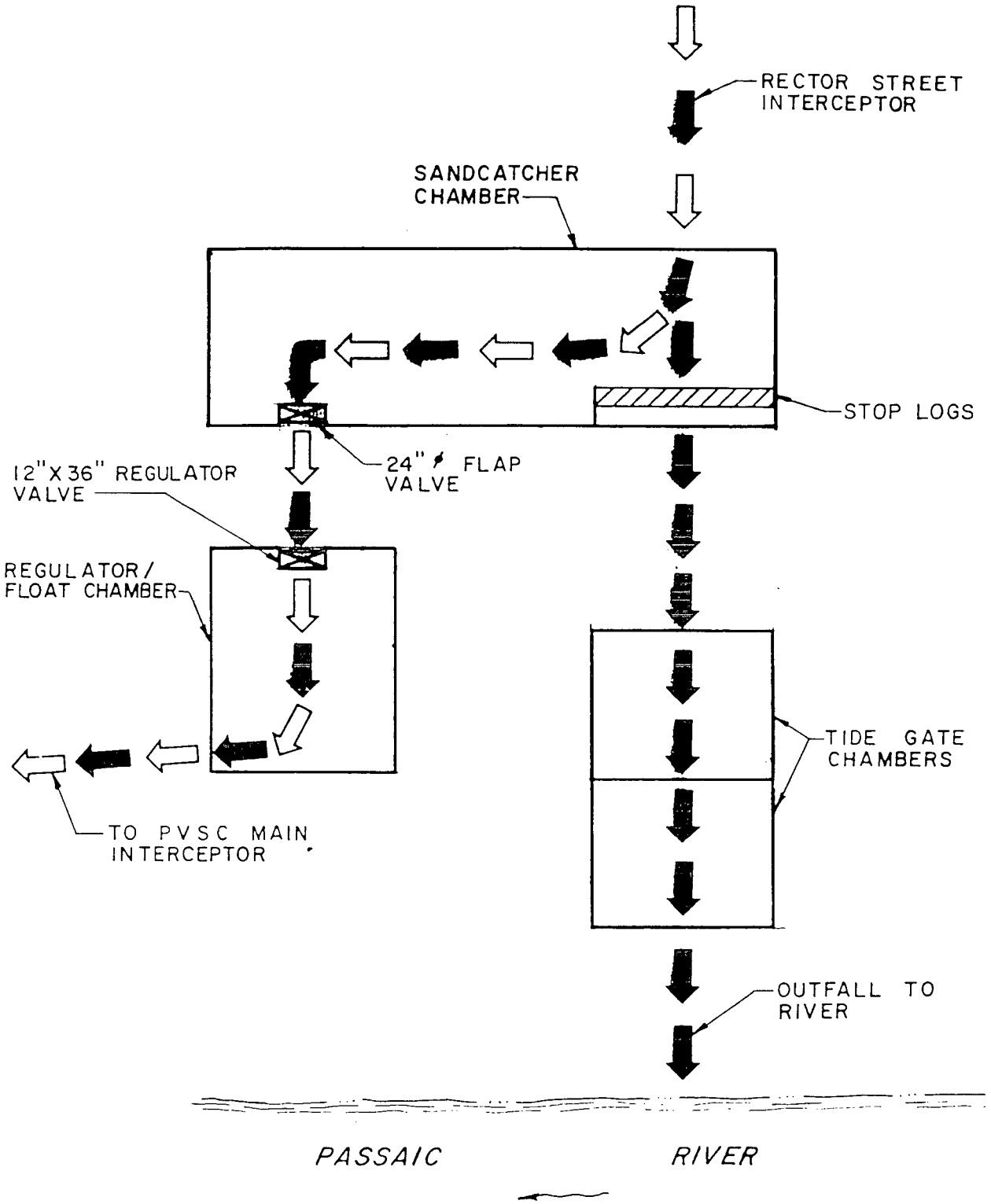
ELSON T. KILLAM ASSOCIATES, INC.

PLATE A



946200126

PLATE B



LEGEND

DRY WEATHER FLOW

STORM FLOW / OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

RECTOR STREET, NEWARK

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

946200127

RECTOR STREET OVERFLOW CHAMBER N-009 (Cont'd)

Condition of Regulator:	appears inoperable
Special Actions Required:	all combined flow diverted to river during rainfall by closing flap gates in sand catcher chamber, whenever heavy combined flows are experienced.
Overflow Stop Log/Dam Condition:	stop logs located in sand catcher at portal to first tide gate chamber
Tide Gate Condition:	both gates leaking

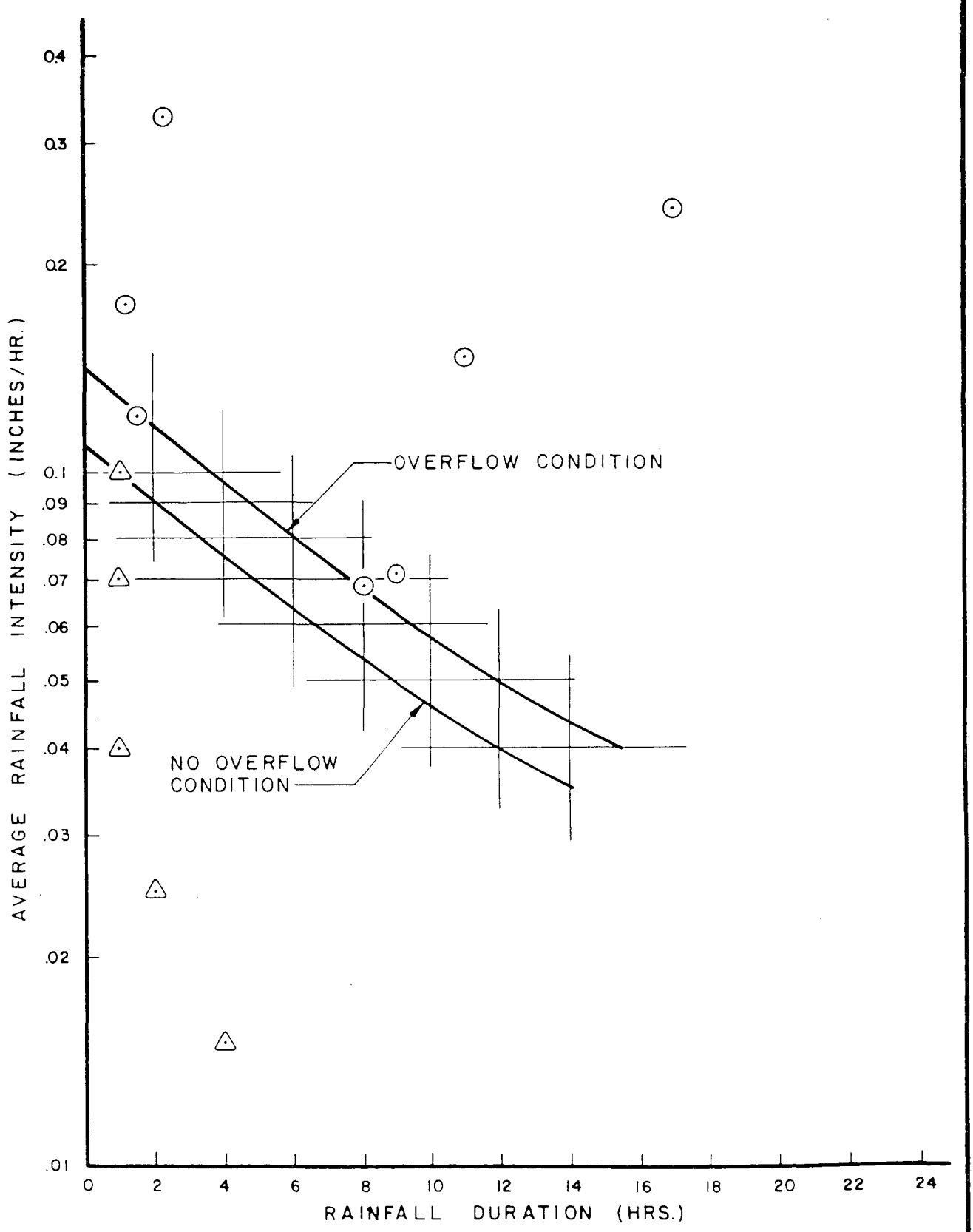
Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.277 square miles - 177 acres
Average Daily Flow	
Seasonal Dry Weather:	1.88 MGD
Seasonal Wet Weather:	1.90 MGD
Estimated Combined Flow to Produce an Overflow:	11.0 MGD
Approximate Length of Combined Sewers Serving District:	25,600 linear feet


NOTES
PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS DRAWN 2000 FEET BETWEEN GRIDS.
PASSAIC RIVER
MUNICIPAL BOUNDARY
COUNTY BOUNDARY
MANHOLE
TERMINAL MANHOLE
PVSC TRUNK SEWER
LOCAL SEWER
FORCE MAIN
PUMPING STATION
SIPHON AND SIPHON CHAMBER
DELINEATION OF SUB AREA
RECTOR STREET OVERFLOW CHAMBER
RECTOR STREET
PASSAIC VALLEY SEWERAGE COMMISSIONERS
RECTOR STREET, NEWARK
PLAN OF COLLECTION SYSTEM
SCALE IN FEET
ELSON T. KILLAM ASSOCIATES, INC.
PLATE D

946200129



LEGEND

○ OVERFLOW

△ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

RECTOR STREET, NEWARK

AVERAGE RAINFALL INTENSITY

VS.

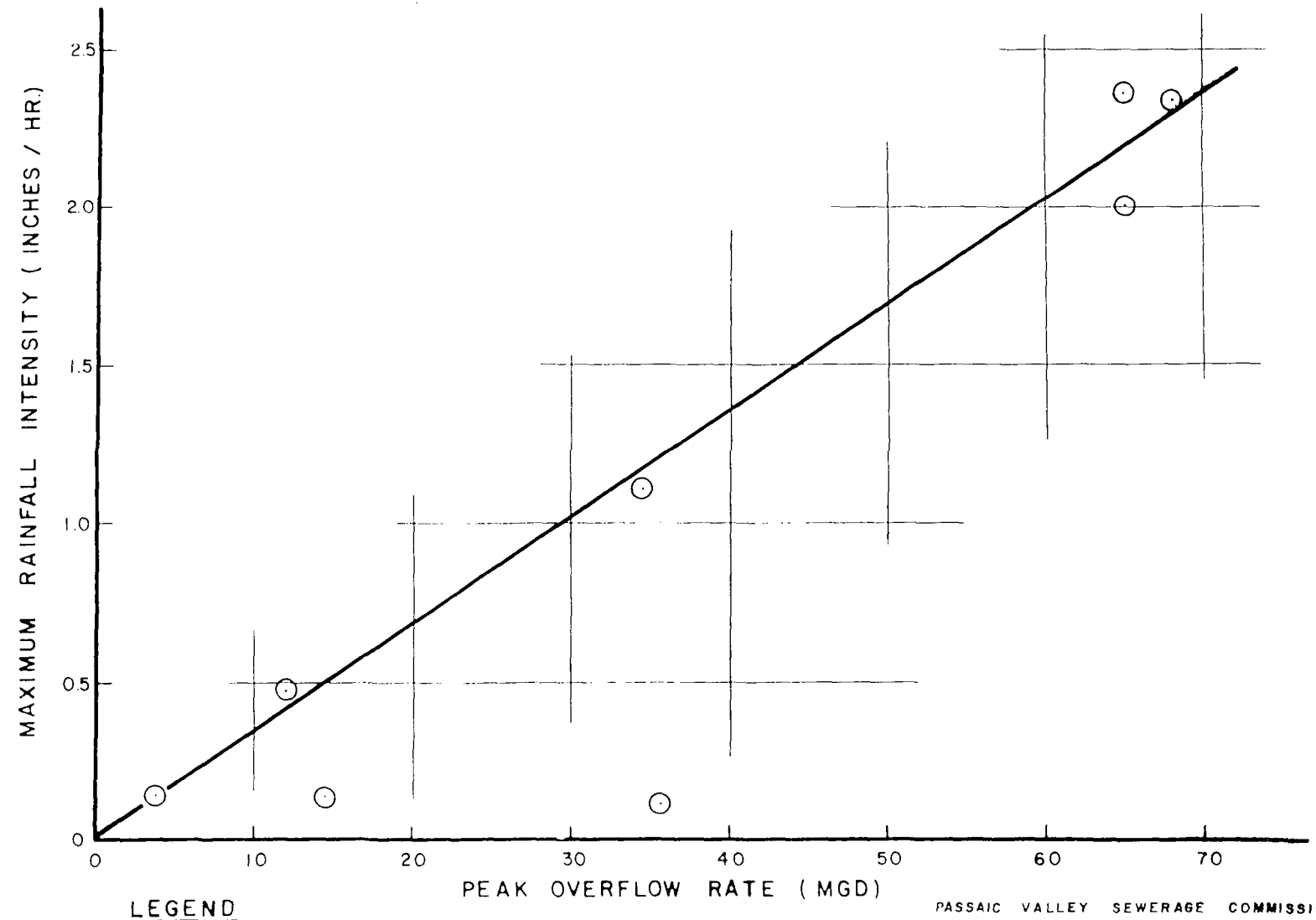
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES INC

Environmental and Hydraulic Engineers

946200130

PLATE E



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

RECTOR STREET, NEWARK

MAXIMUM RAINFALL INTENSITY

VS.

PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY 07041

PLATE F

946200131

PVSC Reference # C-57 Date: 3/6/75

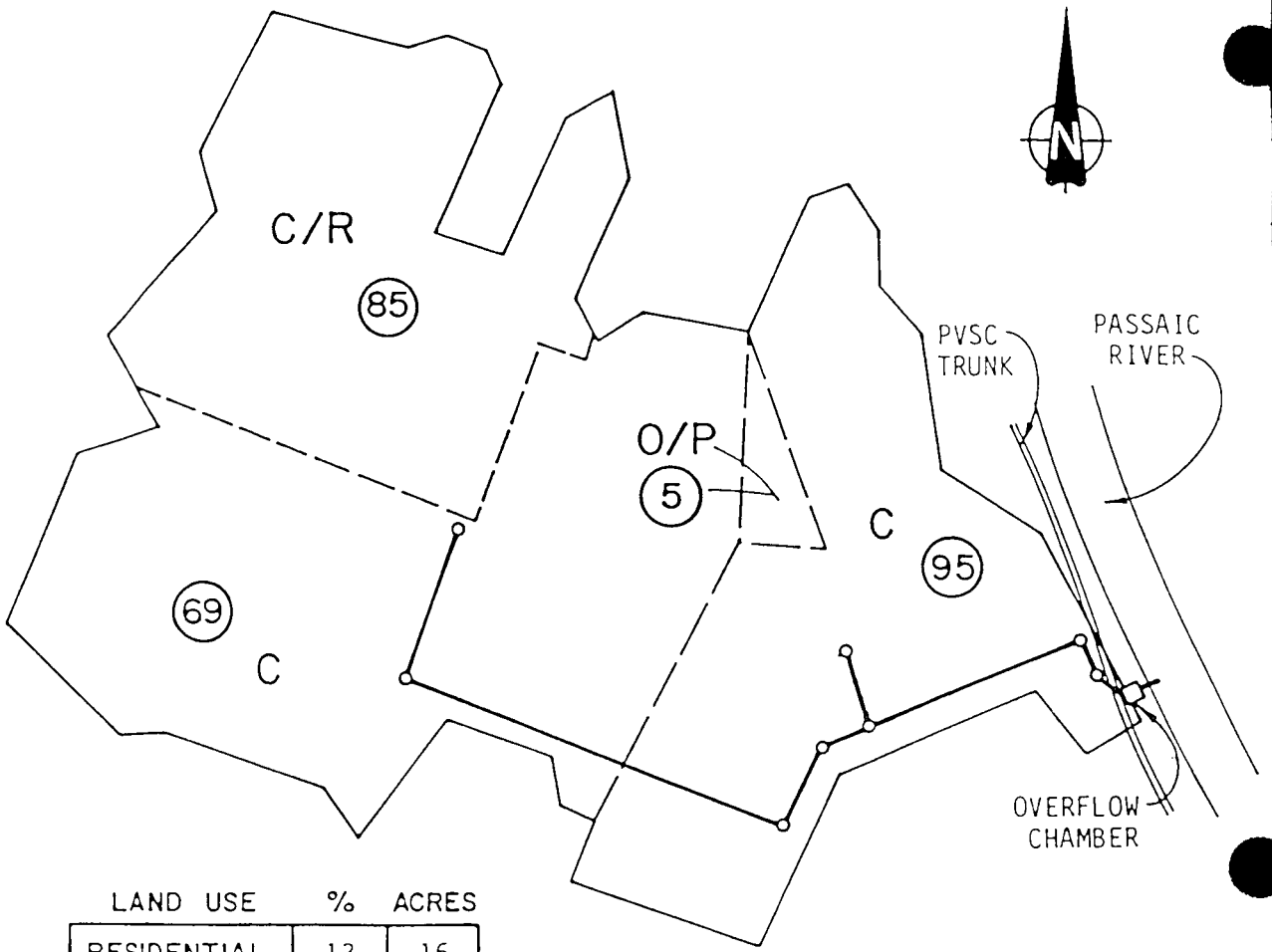
Elson T. Killam Associates - Infiltration Studies
Rector Street, Newark - In sandcatcher
1335 -2/26/75 to 1045 - 2/27/75

Sampler # 306 Set #39
Chamber # 036/N-009

BASELINE

22 SAMPLES

SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC/COD	BOD	BOD/COD
1	7.5	410	210	51.2	330	92	27.8	189	57.3
2	7.5	106	62	58.4	310	84	27.1	127	41.0
3	7.6	126	100	79.4	269	88	32.7	115	42.8
4	7.7	56	46	82.2	265	84	31.7	171	62.2
5	7.5	162	112	69.2	298	92	30.9	165	54.6
6	7.5	120	92	76.7	204	54	26.5	104	51.0
7	7.8	76	76	100.0	171	54	31.6	103	60.3
8	7.6	82	24	29.3	126	38	30.1	45	35.7
9	7.6	60	44	73.3	106	32	30.2	39	36.8
10	7.3	56	34	60.8	82	30	36.6	41	50.0
11	7.4	50	50	100.0	78	22	28.2	31	39.7
12	7.7	38	32	84.3	45	16	35.6	27	60.0
13	7.5	52	22	42.3	53	20	37.7	28	52.9
14	7.6	54	50	92.6	29	12	41.3	11	37.9
15	7.5	46	0	0.0	24	12	50.0	19	79.2
16	7.5	68	26	38.3	37	12	32.5	22	59.5
17	7.5	74	14	18.9	49	16	32.7	24	49.1
18	7.6	64	20	31.3	53	16	30.2	29	54.8
19	7.5	84	38	50.3	122	28	22.9	55	45.1
20	7.5	78	46	59.0	220	75	34.1	116	52.8
21	7.3	164	78	47.2	298	90	30.2	99	33.2
22	-	138	96	69.6	445	96	21.6	-	-
							31.9		50.3



LAND USE	%	ACRES
RESIDENTIAL	13	16
COMMERCIAL	80	103
INDUSTRIAL	-	-
OPEN/PARKS	7	9
TOTAL	100	128

SUB AREA M

LEGEND

- MAIN INTERCEPTOR
- R RESIDENTIAL
- C COMMERCIAL
- I INDUSTRIAL
- O/P OPEN/PARK
- SUBCATCHMENT BOUNDARY
- (15) PERCENT IMPERMEABLE AREA WITHIN SUBCATCHMENT
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISSIONERS

NEW JERSEY

COMBINED SEWER OVERFLOW FACILITY PLAN

LAND USE

RECTOR STREET OVERFLOW

CITY OF NEWARK

Elson T. Killam Associates, Inc.
Environmental and Hydraulic Engineers
27 Bleeker Street Millburn New Jersey 07041

FIGURE N-009

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

SAYBROOK PLACE, NEWARK

N-010

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY 07041

SAYBROOK PLACE OVERFLOW CHAMBER

The Saybrook Place overflow chamber serves a tributary area of 306 acres, all of which are provided with a combined sewer system.

The theoretical dry weather flow in this tributary area was determined to be approximately 1.5 MGD. The actual dry weather flow was found to range from about 4.8 to 4.9 MGD. From the above, it appears that the infiltration in this district is approximately 3.4 MGD.

Under storm flow conditions in the collection system, it was found that the overflow was activated with essentially most rainfalls of even moderate intensity.

The Saybrook Place overflow chamber is required to be manually controlled to increase the overflow which would otherwise occur under automatic operation in order to prevent surcharge and damage in the collection system.

Metering and sampling facilities were installed and maintained in this chamber from January 8, 1975 to June 29, 1975. During this period of time, 47 periods of rainfall occurred. The total rainfall ranged from about 0.04 to 1.85 inches. During this period of observation, 23 overflows were measured or determined to have occurred. It was found that, when the average rainfall intensity approached or exceeded about 0.05 inches per hour for a long duration, overflow was likely to occur. Thus, overflows occurred about 50 percent of the time.

It was observed that the volumetric overflow ranged from 0.2 to 8.1 MG per rainfall occurrence. Peak overflow rates were found to be as high as 89 MGD.

It is estimated that overflow will occur from 35 to 45 times at this chamber, based upon rainfall occurrences ranging from 70 to 90 times per year.

Sampling during dry weather periods indicated that the total suspended solids ranged from 41 mg/l to 196 mg/l, with BOD ranging from 61 mg/l to 340 mg/l.

The results of the sampling indicated that the storm water concentration was not too severe, with BOD values ranging from about 16 mg/l to as high as 228 mg/l. The Total Suspended Solids (TSS) were found to range from a low of 48 mg/l to a peak of 460 mg/l, which was indicative of concentrated pollution due to flushing action.

The Saybrook Place overflow chamber serves an area which is primarily domestic sewage with industrial waste (about 40 percent of flow) connected to this system.

Some surcharge from high tide at the Saybrook Place overflow chamber was observed. In this chamber, infiltration or river water intrusion was observed in the initial stages of this study. However, this has been corrected by the staff of the PVSC. The result of surcharges at this chamber under high tide conditions is to reduce the freedom of overflow which would occur under either automatic operation or manually operated valve operation, resulting in the surcharge of the PVSC interceptor sewer line.

ELSON T. KILLAM ASSOCIATES, INC.

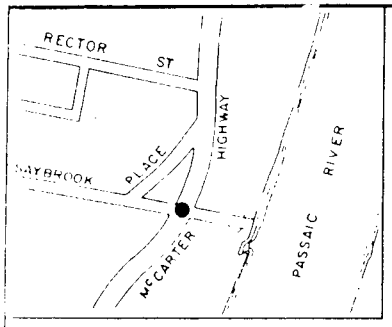
OVERFLOW DATA EXTRACT

SAYBROOK PLACE OVERFLOW CHAMBER

NEWARK

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	Highly developed residential and industrial area
Overflow Location (See Plate A):	Just south of old brick warehouse in east side of intersection of Saybrook Place and McCarter Highway
District Outlet Sewer (See Plates A and B):	90" x 80" elliptical brick sewer
Outfall to River (See Plates A and B):	75" diameter brick sewer
Outfall Condition:	Line clear of debris and functioning; immediate area of outfall (point of egress) cluttered with debris
Tidal Effects:	Some tidal intrusion noted
Surcharge Effects:	None evident
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.



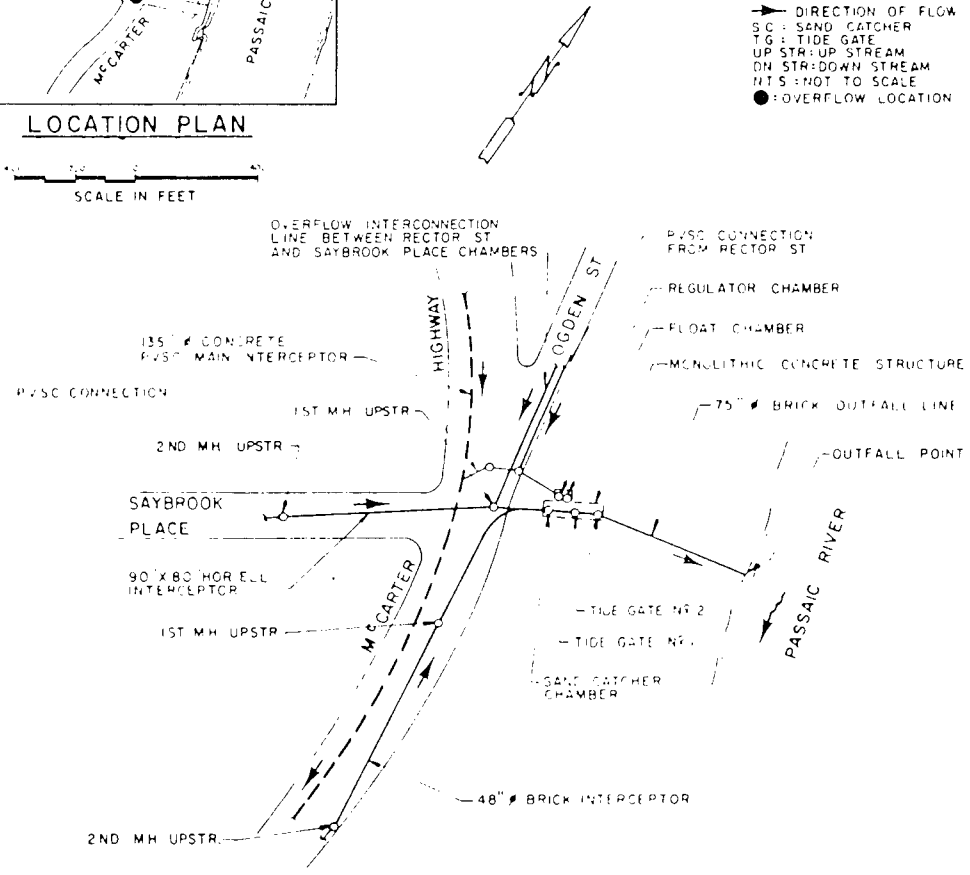
LOCATION PLAN

SCALE IN FEET

NOTE:
ALL SIDE PIPELINES EXCEPT PVSC MAIN INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY

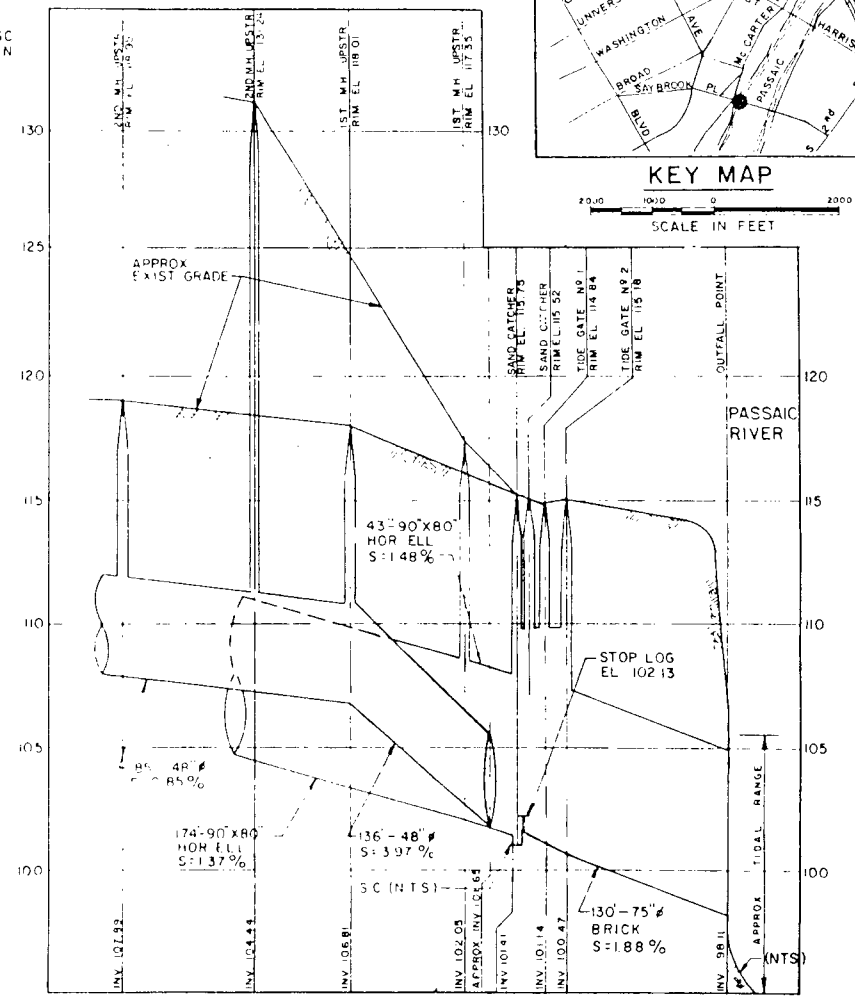
LEGEND

→ DIRECTION OF FLOW
S.C. : SAND CATCHER
T.G. : TIDE GATE
UP STR: UP STREAM
DN STR: DOWN STREAM
N.T.S. : NOT TO SCALE
● : OVERFLOW LOCATION



PLAN

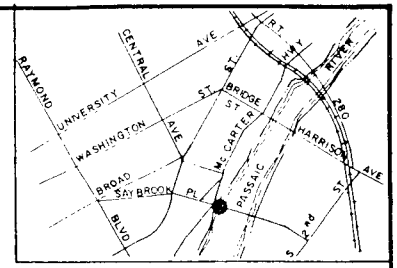
SCALE IN FEET



PROFILE

HORIZ SCALE IN FEET

VERT SCALE IN FEET



KEY MAP

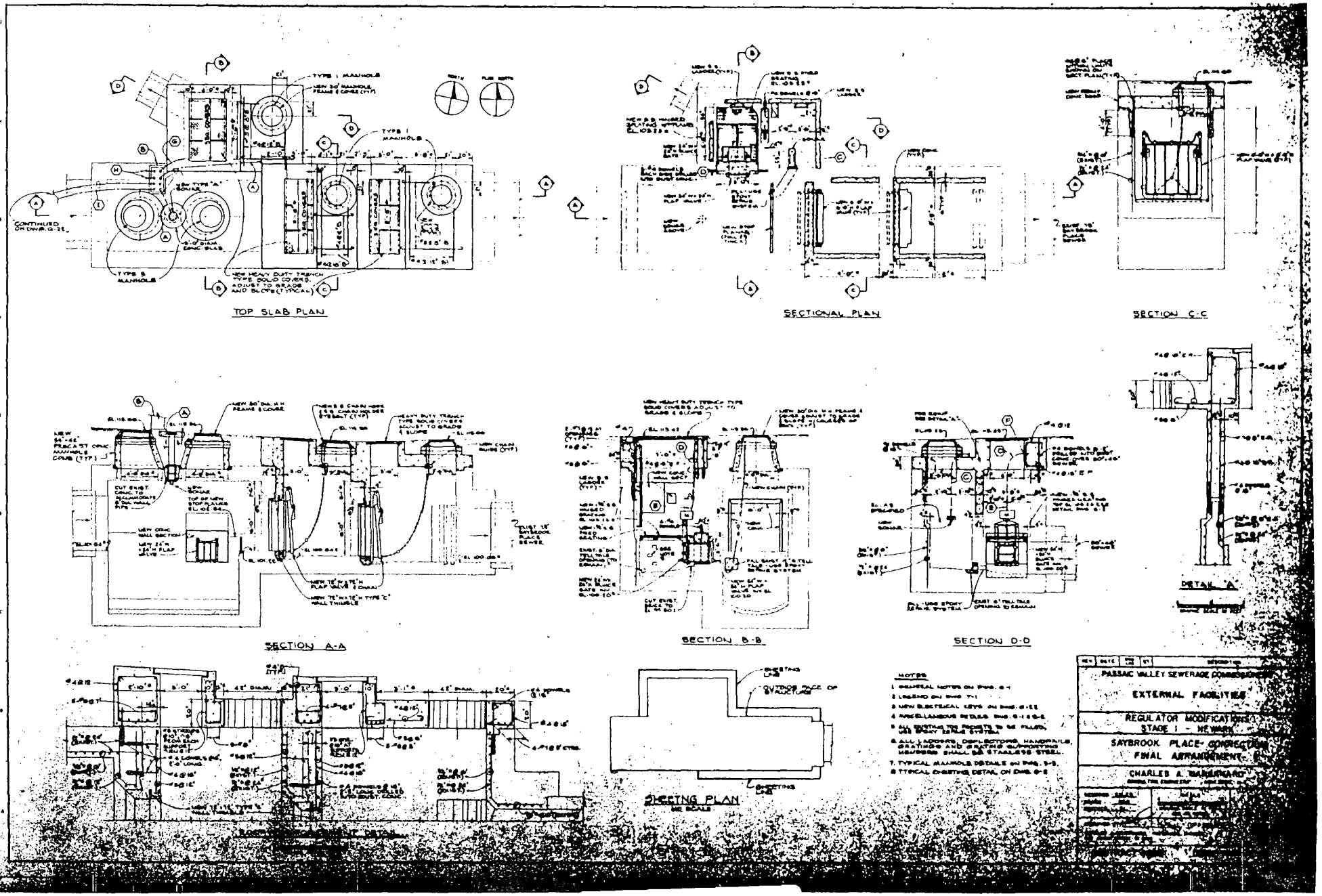
SCALE IN FEET

946200138

PASSAIC VALLEY SEWERAGE COMMISSIONERS
OVERFLOW CHAMBER N-010
SAYBROOK PLACE, NEWARK
PLAN AND PROFILE

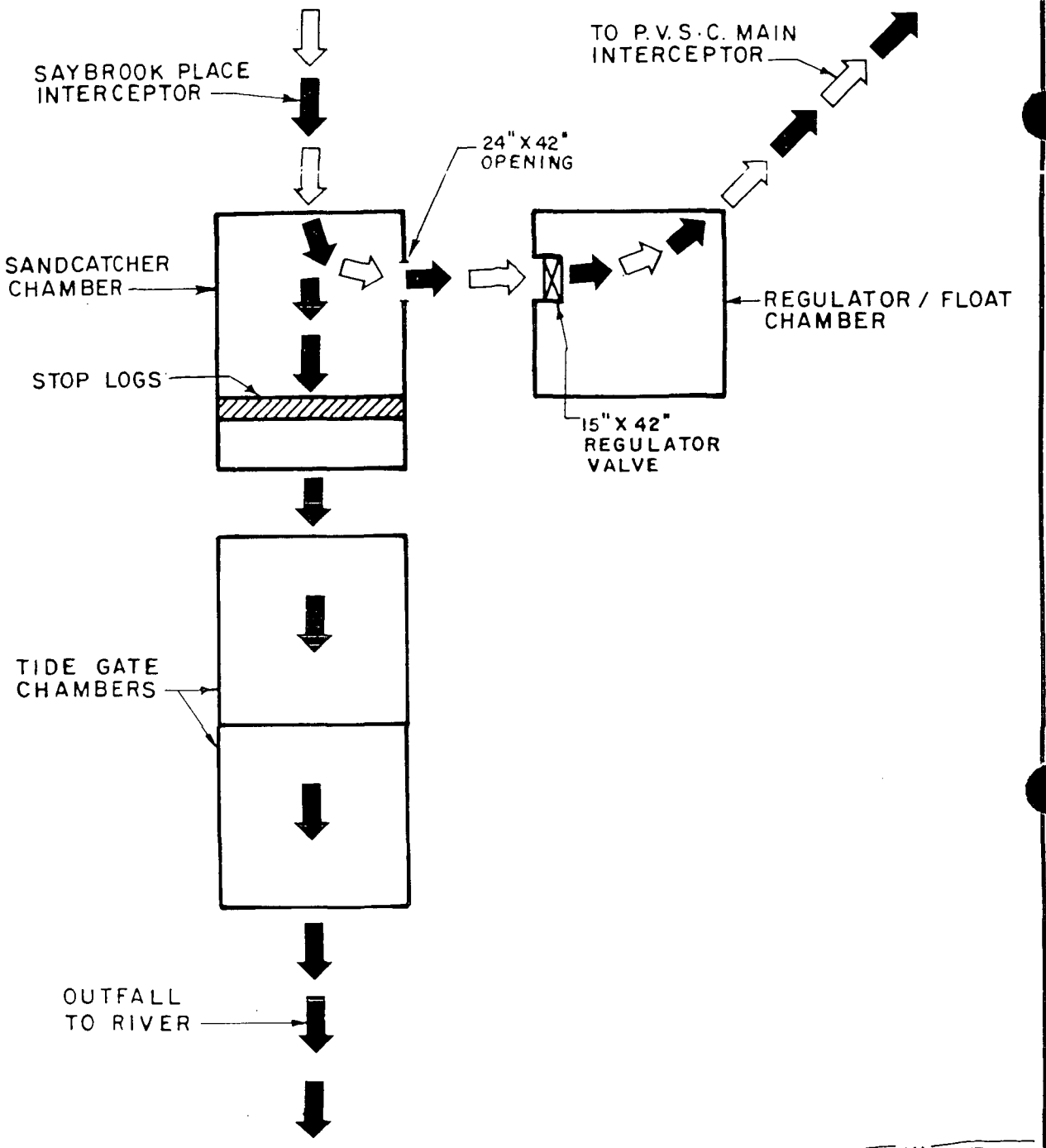
ELSON T. KILLAM ASSOCIATES, INC.

PLATE A



946200139

PLATE B



LEGEND

DRY WEATHER FLOW

STORM FLOW / OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

SAYBROOK PLACE, NEWARK

SCHEMATIC

ELSON T. KILLAM ASSOCIATES INC.

Environmental and Hydraulic Engineers

946200140

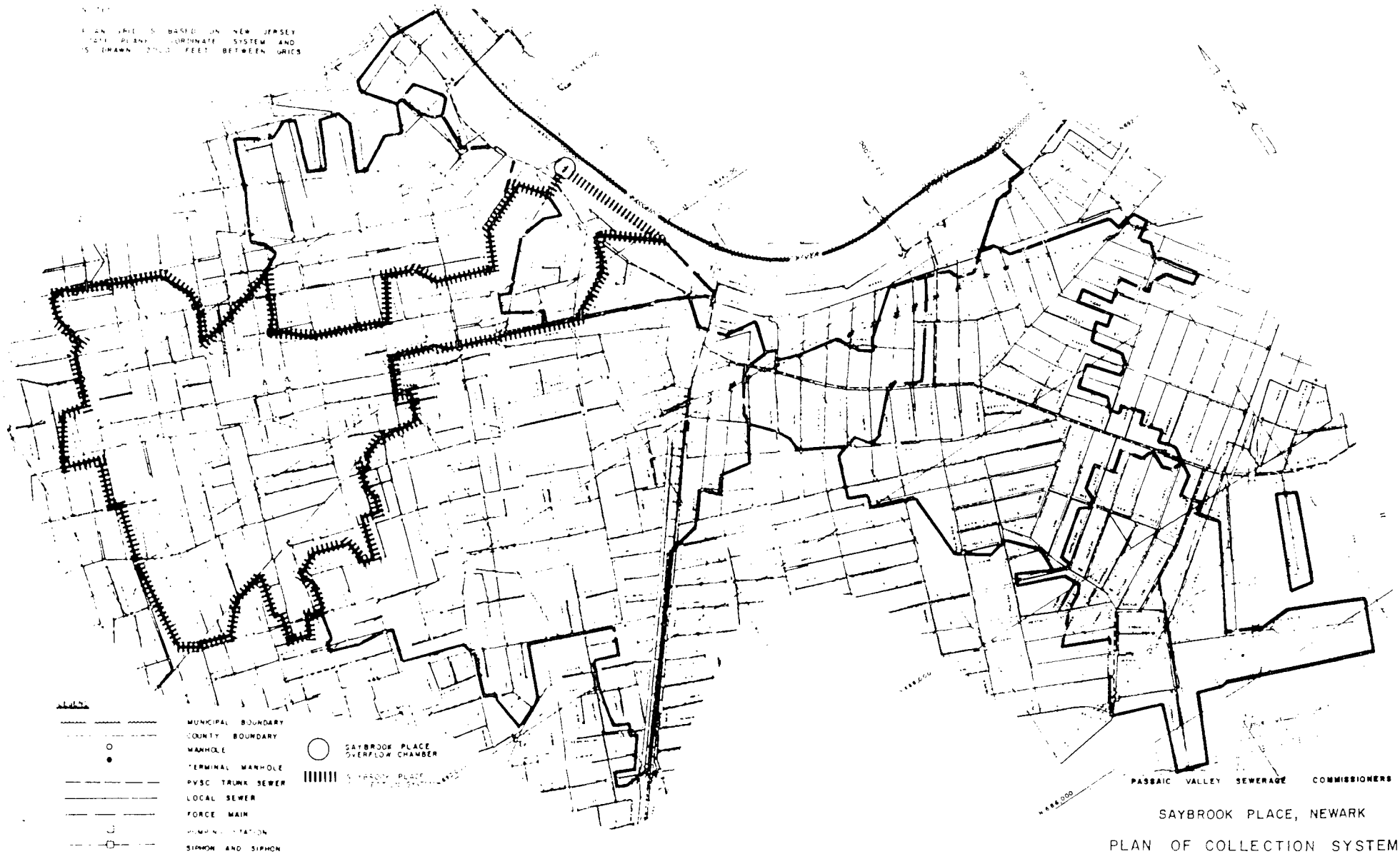
PLATE C

SAYBROOK PLACE OVERFLOW N-010 (Cont'd.)

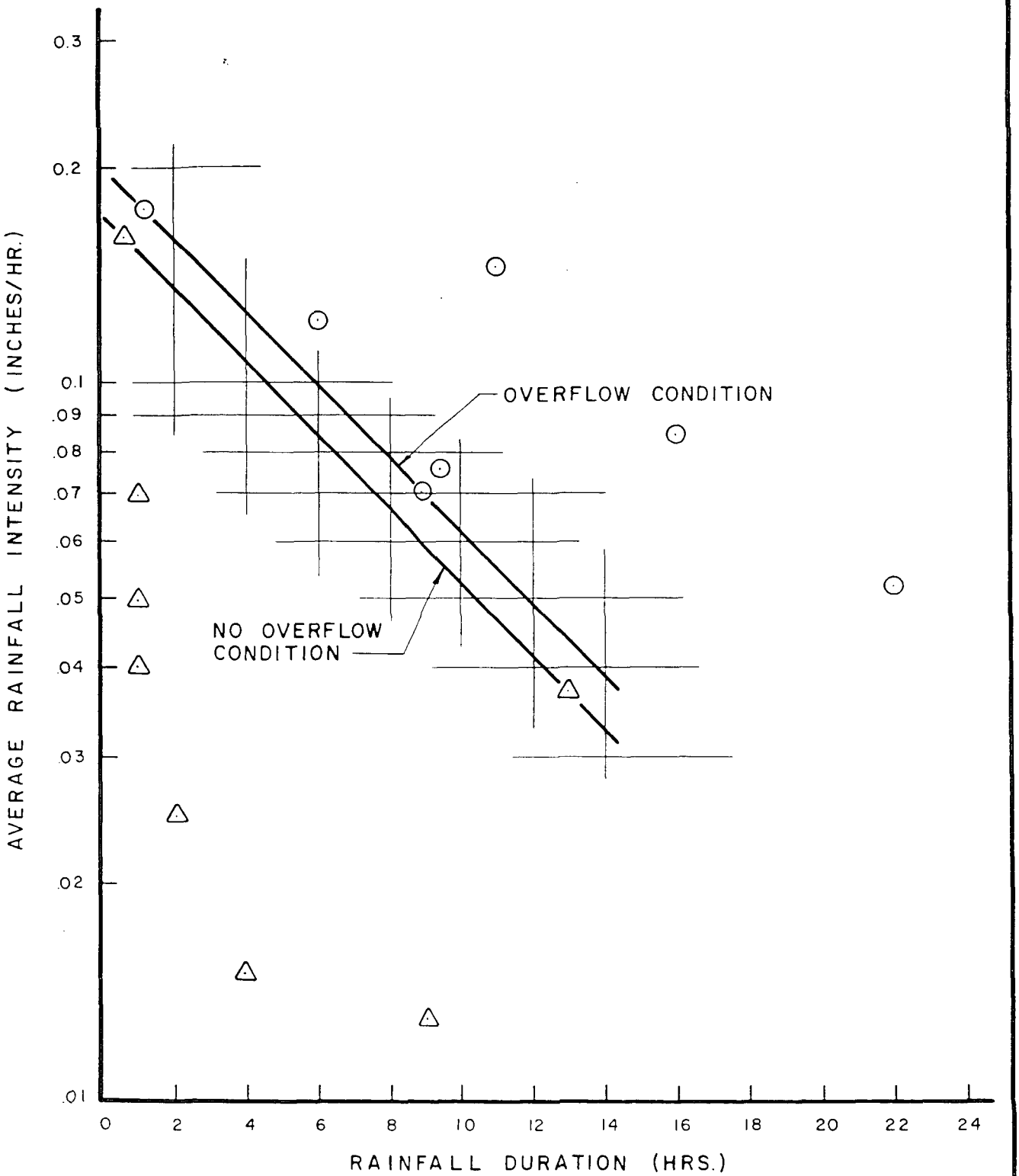
Condition of Regulator:	inoperable in automatic mode, but may be operated to closure, manually
Special Actions Required:	All combined flow diverted to river during rainfall by closing regulator valve manually when, based on prior experience, heavy combined flows are anticipated.
Overflow Stop Log/Dam Condition:	located at downstream end of sand catcher, ahead of tide gate chambers
Tide Gate Condition:	Both tide gates not seating to full closure, and leaking
Note:	During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.748 square miles - 306 acres
Average Daily Flow	
Seasonal Dry Weather:	4.8 MGD
Seasonal Wet Weather:	4.9 MGD
Estimated Combined Flow to Produce an Overflow:	17 MGD
Approximate Length of Combined Sewers Serving District:	56,500 linear feet


MUNICIPAL BOUNDARY
COUNTY BOUNDARY
MANHOLE
TERMINAL MANHOLE
PVSC TRUNK SEWER
LOCAL SEWER
FORCE MAIN
SIPHON AND SIPHON CHAMBER
DELINEATION OF SUB AREA
SAYBROOK PLACE OVERFLOW CHAMBER
PASSAIC VALLEY SEWERAGE COMMISSIONERS
SAYBROOK PLACE, NEWARK
PLAN OF COLLECTION SYSTEM
SCALE IN FEET
ELSON T. KILLAM ASSOCIATES, INC.
PLATE D

946200142



LEGEND

⊙ OVERFLOW

△ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

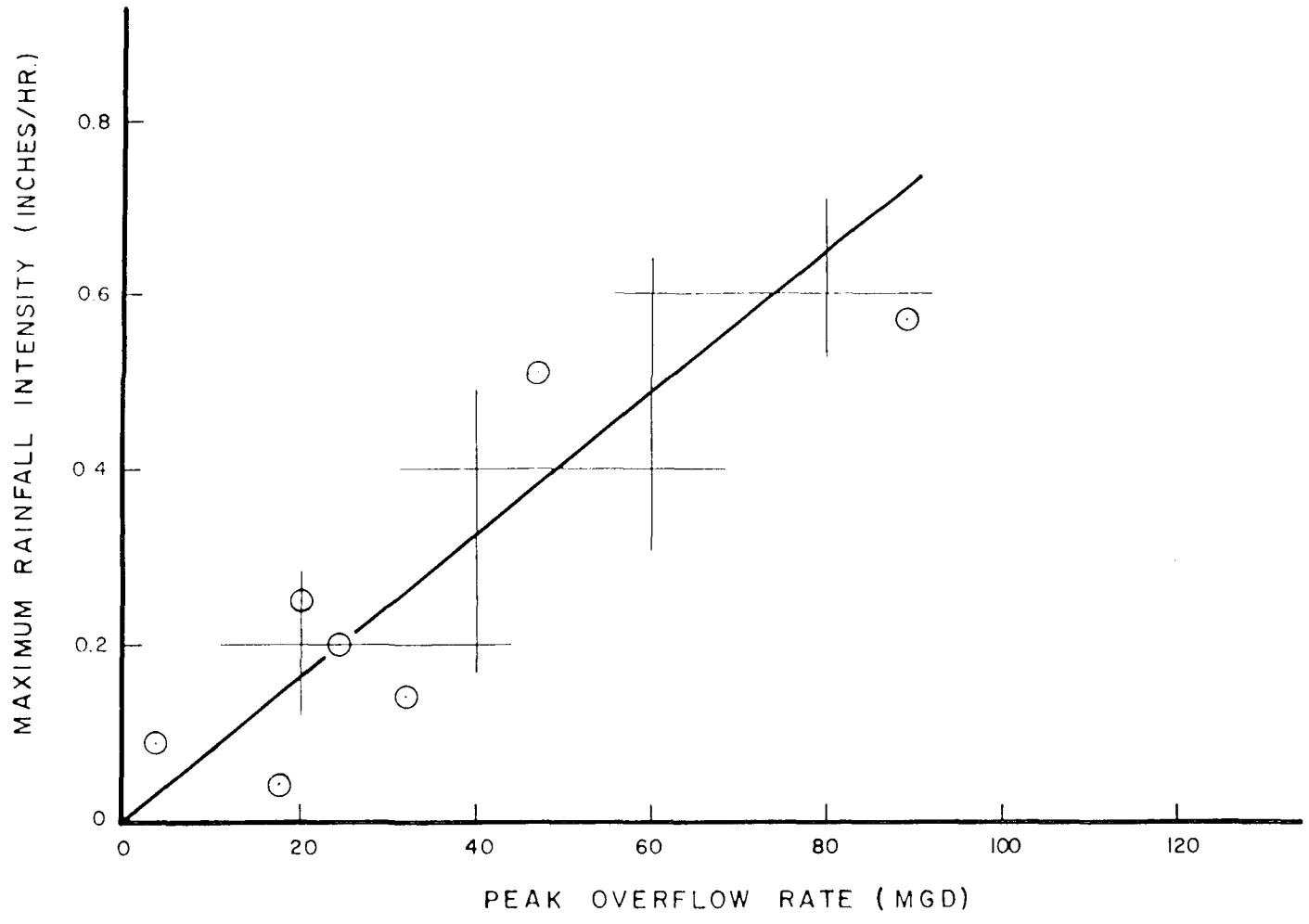
SAYBROOK PLACE, NEWARK

AVERAGE RAINFALL INTENSITY
VS.
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES INC.
Environmental and Hydraulic Engineers

PLATE E

946200143



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

SAYBROOK PLACE, NEWARK

MAXIMUM RAINFALL INTENSITY VS. PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers · 48 ESSEX STREET HILLBURN, NEW JERSEY 07041

PLATE F

P.V.S.C Reference # J - 126

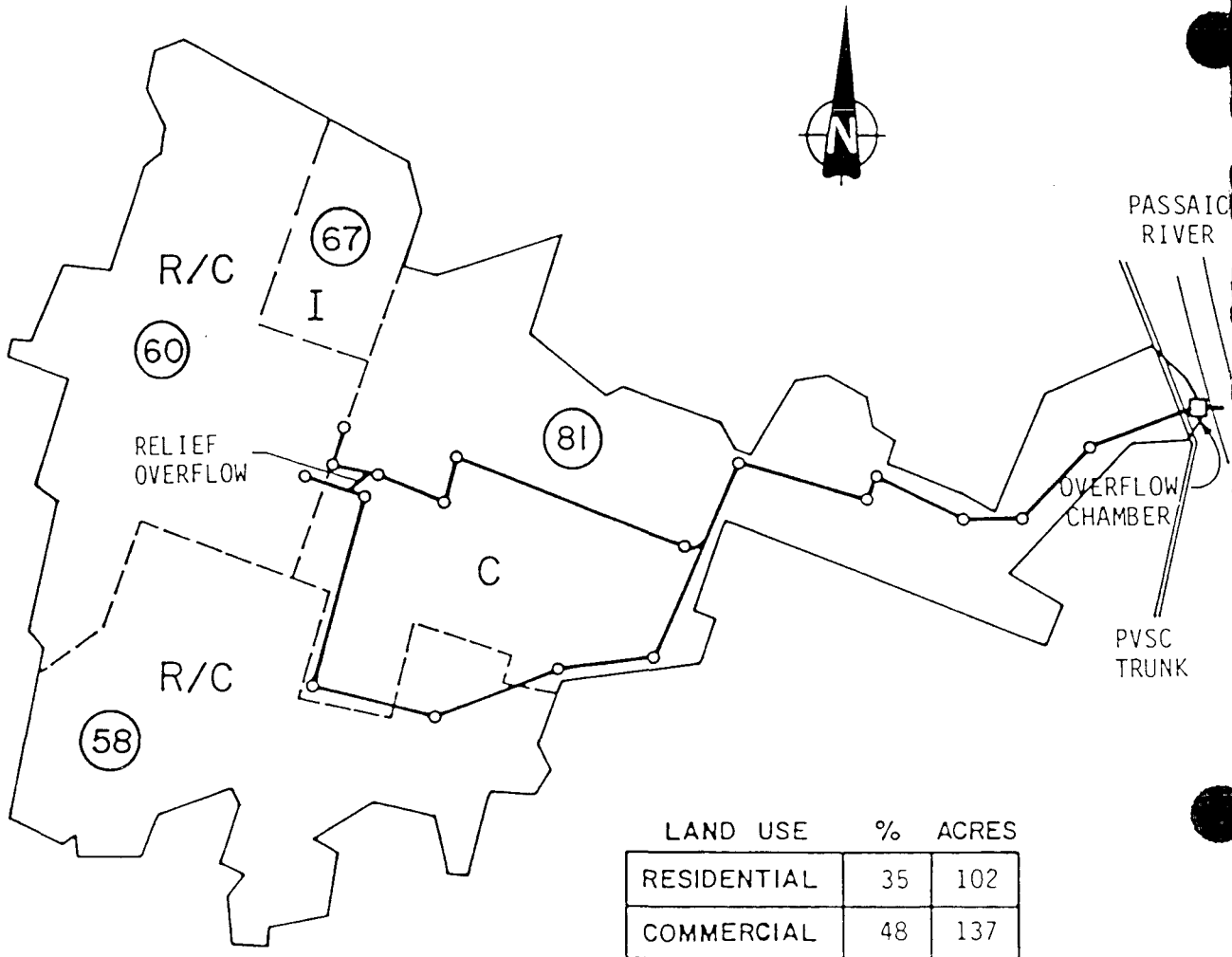
Date: 10/29/74

Elson Killam Associates-Infiltration Studies
Saybrook Place, Newark 11:30 A.M. 10/28/74 to 10:30 A.M. 10/29/74
23 Samples - In Sandcatcher.

Baseline

Sample #	pH	T.S.S	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C/ C.O.D.	B.O.D.	B.O.D./ C.O.D
Part 1.									
1.	8.1	88	50	56.8	153	43	28.1	120	78.3
2.	7.7	72	42	58.3	157	48	30.6	111	70.7
3.	7.5	100	20	20.0	161	49	30.4	92	57.2
4.	7.7	92	72	78.3	137	47	34.3	92	67.1
5.	7.7	68	54	79.4	125	45	36.0	88	70.4
6.	7.6	138	92	66.7	122	40	32.8	95	77.6
7.	7.5	114	40	35.1	118	52	44.1	117	-
8.	7.4	98	50	51.0	125	48	38.4	106	84.7
9.	7.5	90	36	40.0	106	40	37.7	-	
10.	7.5	78	26	54.2	110	29	26.4	101	91.8
11.	7.4	72	72	100.0	67	26	38.8	-	
12.	7.5	90	60	66.7	86	27	31.4	73	84.9
13.	7.6	60	46	76.7	71	20	28.2	-	
14.	7.6	41	24	58.5	39	21	53.8	-	
15.	7.5	48	44	91.2	35	18	51.4	-	
16.	7.5	64	56	87.5	51	18	35.3	-	
17.	7.6	70	60	85.7	55	17	30.9	-	
18.	7.5	56	50	89.3	39	14	35.9	-	
19.	7.5	58	50	86.2	43	16	37.2	-	
20.	7.6	96	20	20.8	67	25	37.3	-	
21.	7.6	130	58	44.6	141	48	34.0	61	42.2
22.	7.7	162	94	58.0	200	66	33.0	-	
Part III.									
23.	7.8	196	114	58.2	584	90	15.4	340	58.2
24.	NO SAMPLE						34.8		71.2
Average		90.5			121.4			116.3	

946200145



LAND USE	%	ACRES
RESIDENTIAL	35	102
COMMERCIAL	48	137
INDUSTRIAL	17	48
OPEN/PARKS	-	-
TOTAL	100	287

SUB AREA N

LEGEND

- MAIN INTERCEPTOR
- R RESIDENTIAL
- C COMMERCIAL
- I INDUSTRIAL
- O/P OPEN/PARK
- SUBCATCHMENT BOUNDARY
- (15) PERCENT IMPERMEABLE AREA WITHIN SUBCATCHMENT
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISSIONERS

NEW JERSEY

COMBINED SEWER OVERFLOW FACILITY PLAN

LAND USE

SAYBROOK PLACE OVERFLOW

CITY OF NEWARK

Elson T. Killam Associates, Inc.
Environmental and Hydraulic Engineers
27 Bleeker Street Millburn New Jersey 07041

FIGURE N-010

946200146

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

CITY DOCK, NEWARK
N-011

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers

CITY DOCK OVERFLOW CHAMBER

The City Dock overflow chamber serves a tributary area of approximately 380 acres. This area is served by combined sewers and the theoretical average daily flow is approximately 2.2 MGD. Measurements in the system indicated that the average daily dry weather flow was 9.8 MGD during dry weather months and about 11.7 MGD during wet weather months. This extreme variation of over 7 to 9 MGD daily is indicative of severe infiltration into the system, which warrants immediate investigation.

Metering and sampling facilities were installed in this chamber from December 31, 1974 through July 21, 1975. During the period that this chamber was studied, rainfall occurred 56 times. Overflows were measured or observed on 35 occasions. In this chamber, infiltration or river water intrusion in the chamber was observed in the initial stages of this study. However, this has been corrected by the staff of the PVSC. It was found that this chamber was affected by high tides in the Passaic River. No overflow occurred from this chamber at such times as the high tide in the river caused backwater which completely closed the tide gates. The closing of the tide gates resulted in equalized flow on either side of the tide gates as the surcharged and stored combined sewer flow in the PVSC interceptor sewer reached equilibrium, commensurate with the ability of the pumps at the treatment plant to pump these unusually high storm flows.

The observations at this overflow chamber indicated that when overflow does occur (low tide conditions in the Passaic River), this condition approximates 3.4 MG. Peak discharge rates in excess of 100 MGD were measured during periods of fairly intense rainfall conditions (0.26 inches per hour).

It is estimated that overflows will occur at this chamber from 45 to 55 times based upon rainfalls occurring from 70 to 90 times yearly.

Sampling of the sewage during dry weather periods indicated that suspended solids ranged from less than 10 mg/1 to 670 mg/1, with BOD values ranging from less than 10 mg/1 to 439 mg/1.

The results of the storm sampling indicated that the waste concentration of the average BOD ranged from about 25 to 410 mg/1. The suspended solids were found to range from about 17 to 841 mg/1.

ELSON T. KILLAM ASSOCIATES, INC.

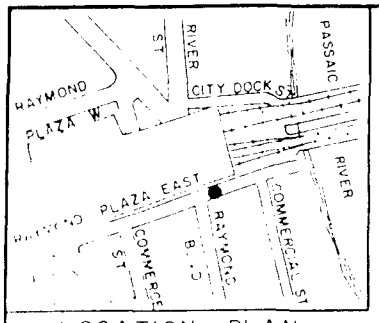
OVERFLOW DATA EXTRACT

CITY DOCK OVERFLOW CHAMBER

NEWARK

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	primarily industrial with some (28 percent) residential flow
Overflow Location (See Plate A):	on the east side of intersection of Raymond Blvd. and Raymond Plaza East
District Outlet Sewer (See Plates A and B):	108" X 90" rectangular concrete sewer
Outfall to River (See Plates A and B):	108" X 90" rectangular concrete sewer
Outfall Condition:	clear and functioning
Tidal Effects:	some tidal intrusions noted
Surcharge Effects:	surcharge observed due to capacity limitation and/or gate closure during high tide
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.



LOCATION PLAN

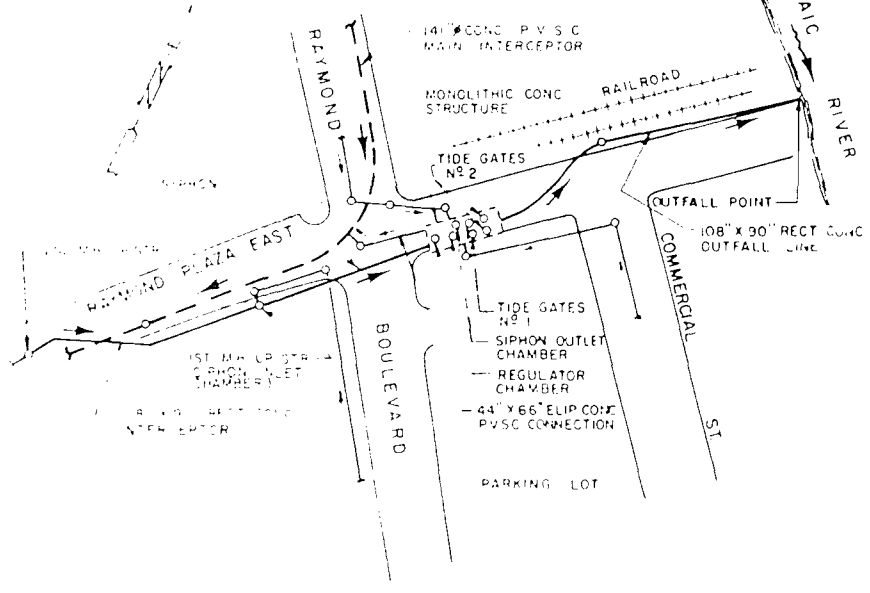
SCALE IN FEET

NOTE

ALL SIDE PIPELINES EXCEPT PVSC MAIN INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.

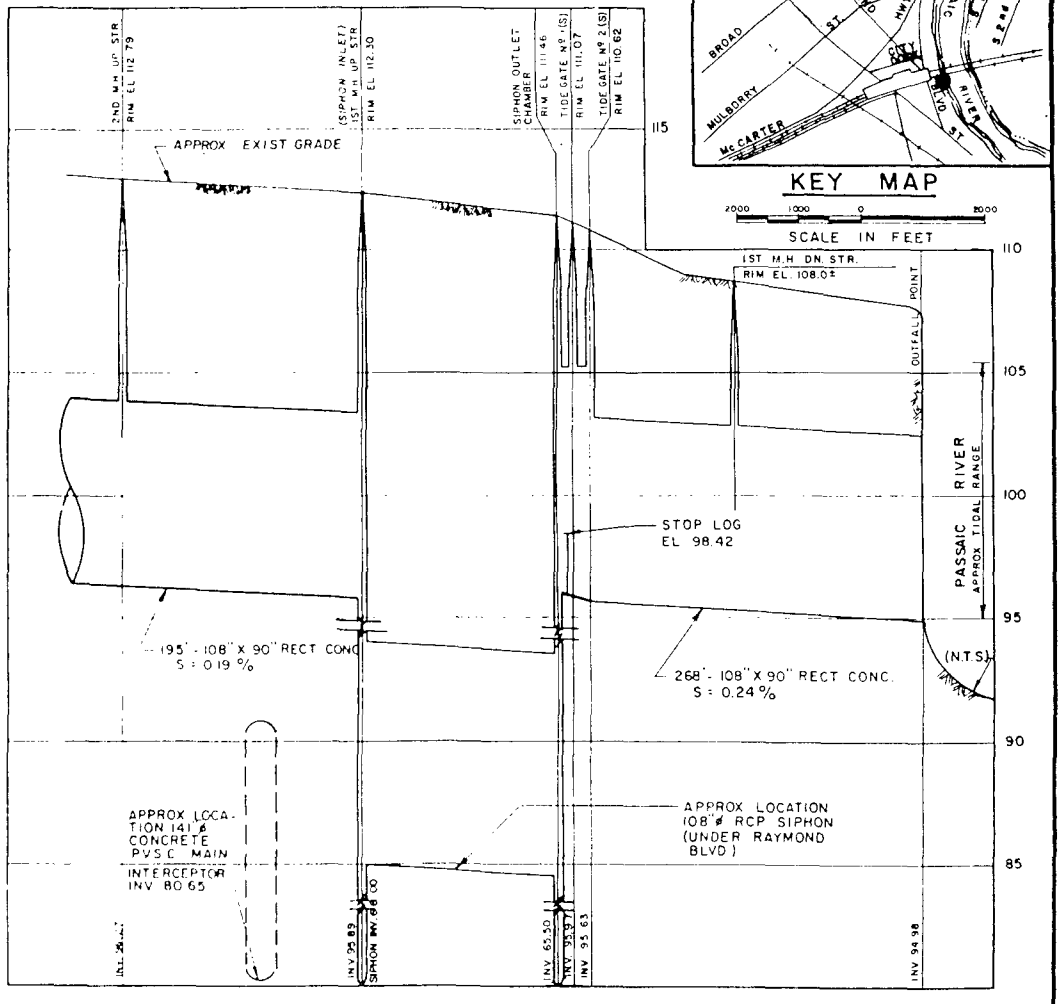
LEGEND:

→ DIRECTION OF FLOW
S.C. = SAND CATCHER
T.G. = TIDE GATES
UP STR. = UP STREAM
DN STR. = DOWN STREAM
N.T.S. = NOT TO SCALE
● = OVERFLOW LOCATION



PLAN

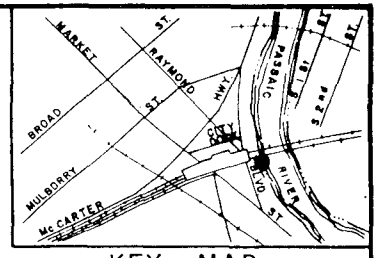
SCALE IN FEET



PROFILE

HORIZ. SCALE IN FEET

VERT. SCALE IN FEET



KEY MAP

2000 1000 0 2000

SCALE IN FEET

ALL ELEVATIONS BASED ON [illegible] AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE [illegible]

946200151

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER N-011

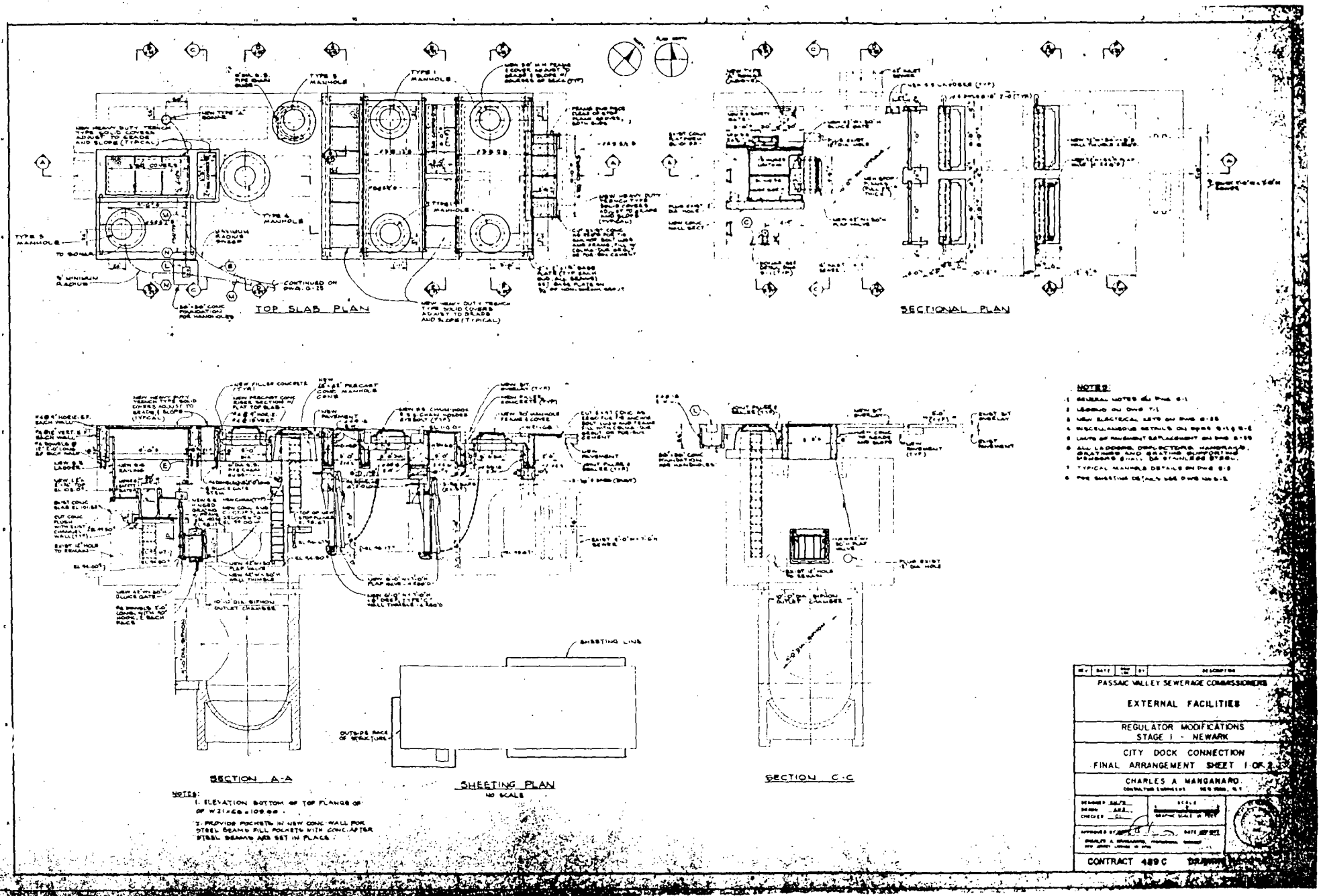
CITY DOCK, NEWARK

PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

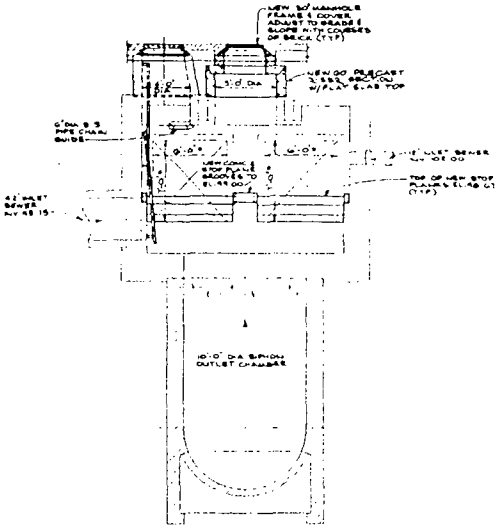
Environmental and Hydraulic Engineers

PLATE A

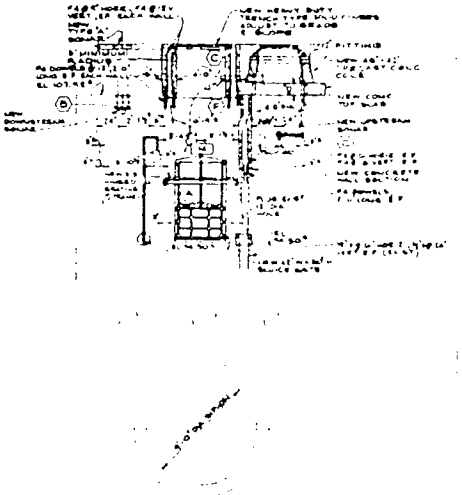


946200152

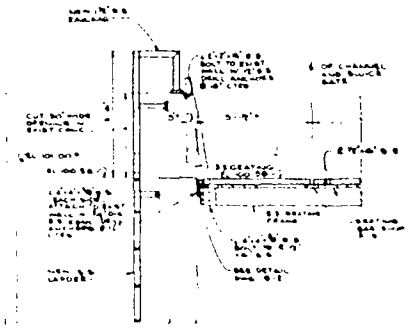
PLATE B-1



SECTION D-D



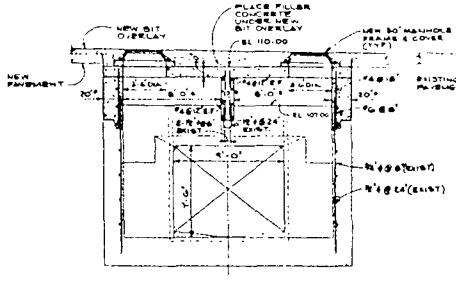
SECTION B-B



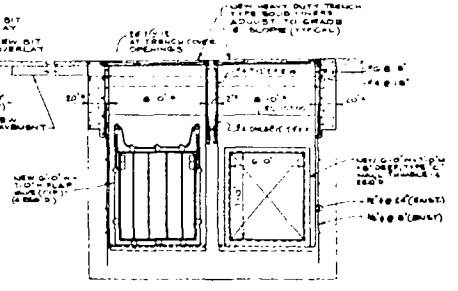
PART SECTION B-B

NOTES

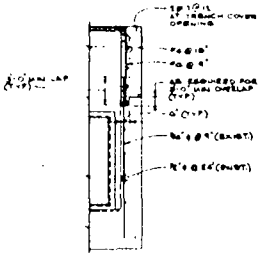
1. FOR NOTES SEE DWG. # 1.0
2. ALL EXCAVATION, FILL, BACKFILL, CONCRETE AND REINFORCING SHALL BE AS SPECIFIED UNDER THE RESPECTIVE HEADINGS. STRUCTURAL STEEL SHALL BE ASTM A-36 STEEL.



SECTION F-F



SECTION E-E



PART SECTION G-G

PASSAIC VALLEY SEWERAGE COMMISSIONERS

EXTERNAL FACILITIES

REGULATOR MODIFICATIONS
STAGE I - NEWARK

CITY DOCK CONNECTION
FINAL ARRANGEMENT SHEET 2 OF 2

CHARLES A. MANGANARO
CONSULTING ENGINEERS NEW YORK, N.Y.

DESIGNED S.D.-J.
DR. BY
CHECKED J.C.

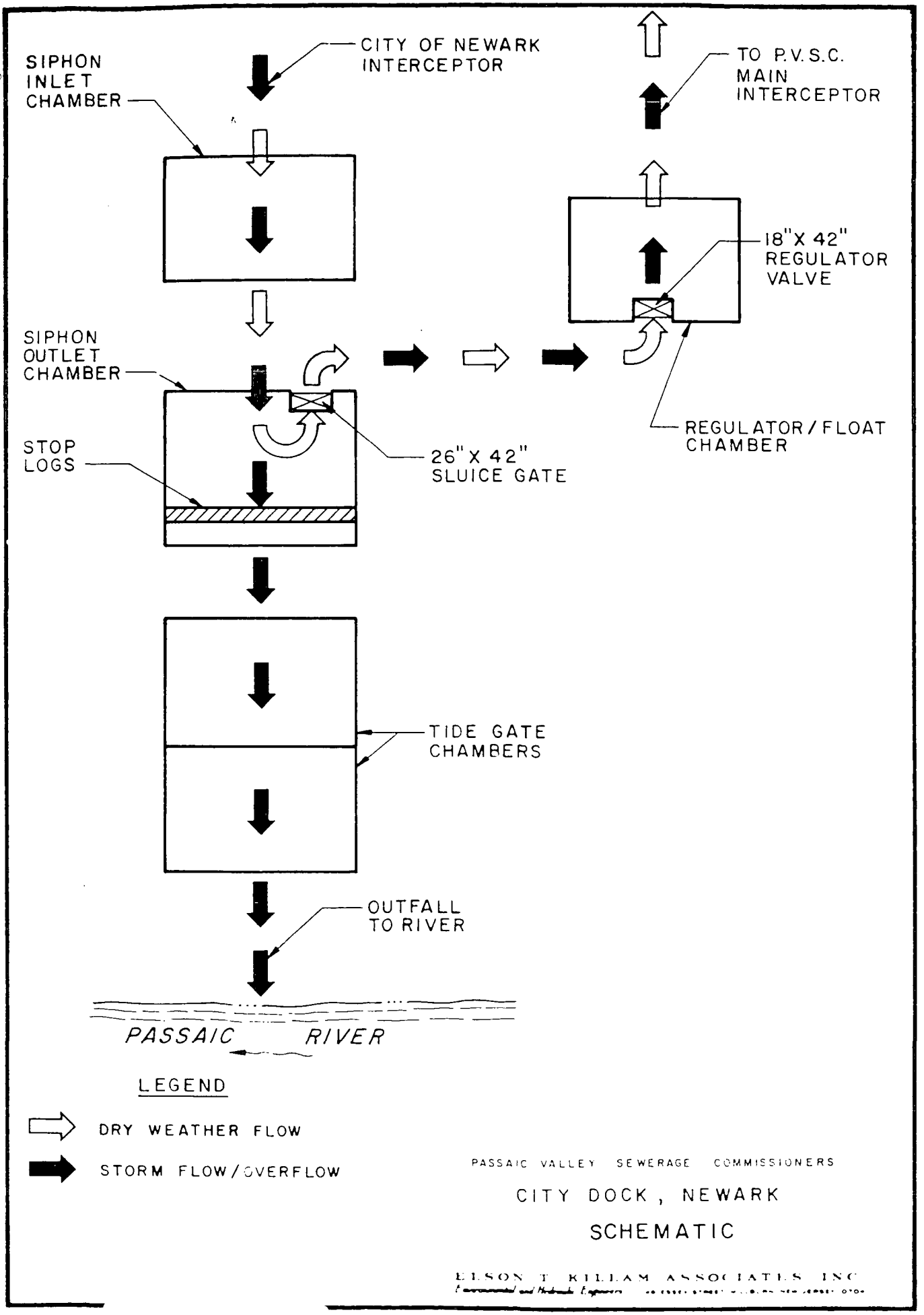
SCALE 0 GRAPHIC SCALE IN FEET AND AS NOTED

APPROVED

DATE JUNE 1977

CONTRACT 489 C DRAWING No. B-20

946200153



PASSAIC VALLEY SEWERAGE COMMISSIONERS

CITY DOCK, NEWARK

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

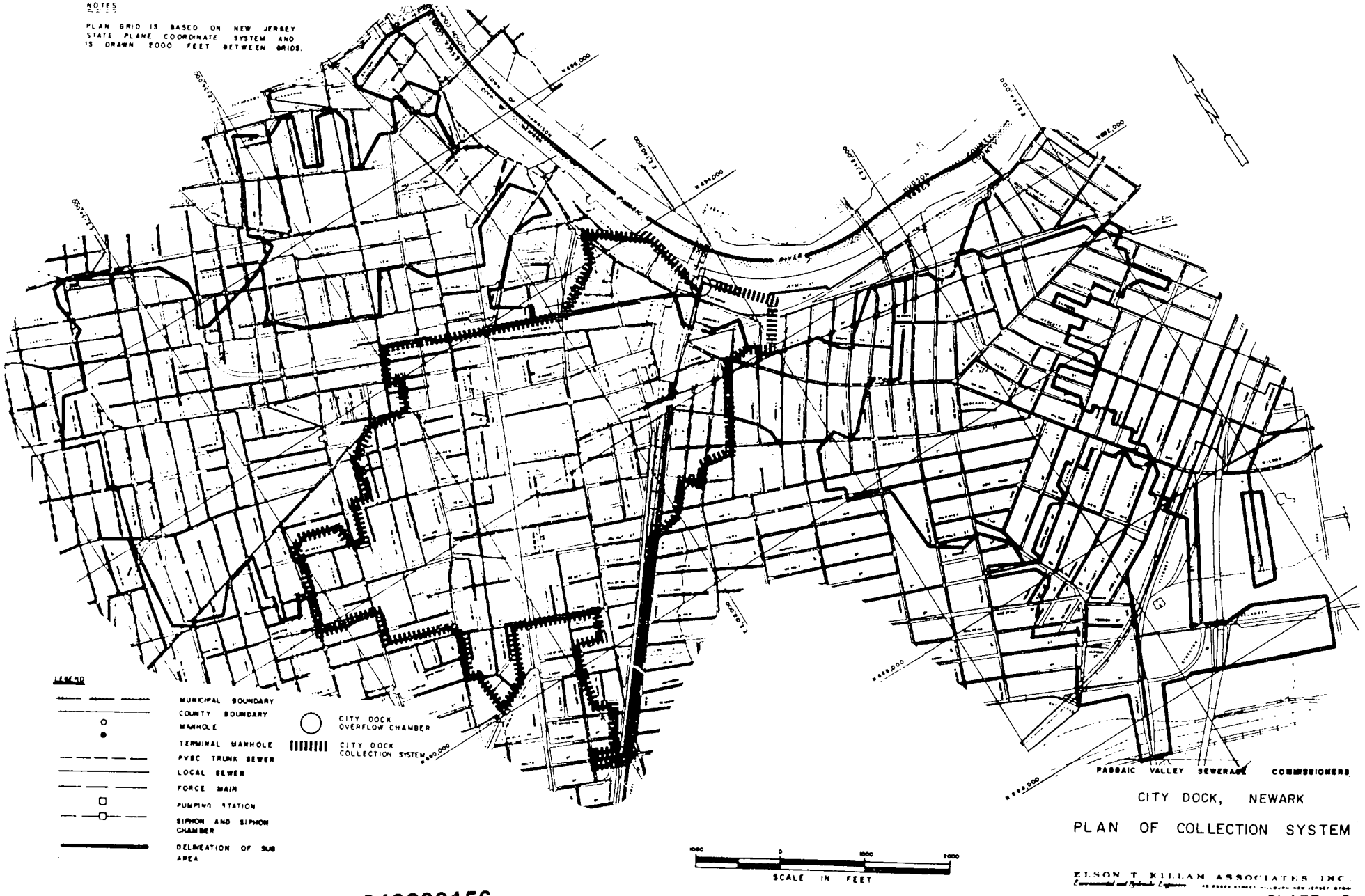
CITY DOCK OVERFLOW N-011 (Cont'd)

Condition of Regulator:	appears inoperable
Special Actions Required:	none
Overflow Stop Log/Dam Condition:	located just before opening to tide gate chambers
Tide Gate Condition:	two sets of two tide gates; all tide gates noted as leaking

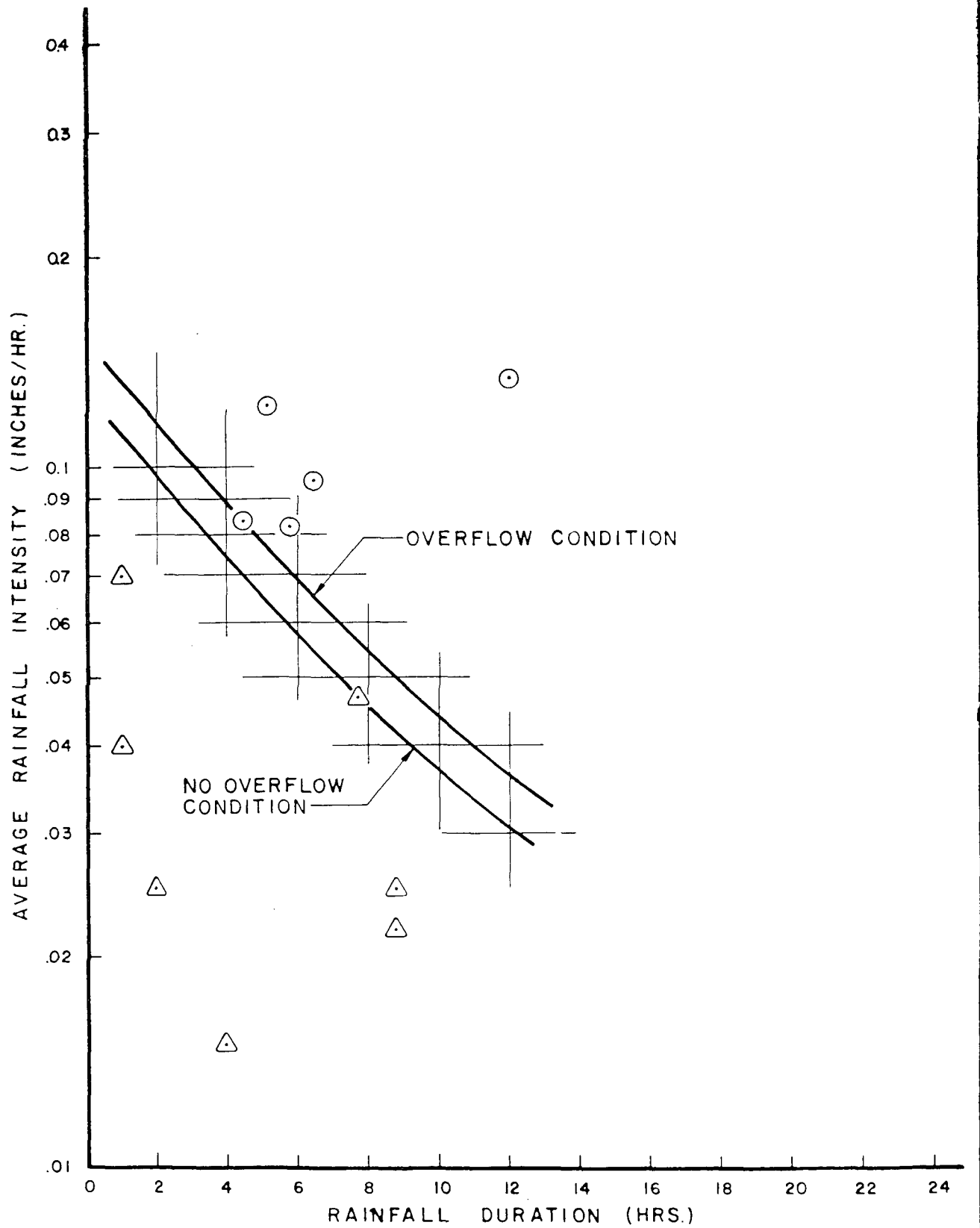
Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.594 square miles - 380 acres
Average Daily Flow	
Seasonal Dry Weather:	9.78 MGD
Seasonal Wet Weather:	11.66 MGD
Estimated Combined Flow to Produce an Overflow:	22.7 MGD
Approximate Length of Combined Sewers Serving District:	69,800 linear feet


NOTES
PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS DRAWN 2000 FEET BETWEEN GRIDS.
LEGEND
MUNICIPAL BOUNDARY
COUNTY BOUNDARY
MANHOLE
TERMINAL MANHOLE
PVSC TRUNK SEWER
LOCAL SEWER
FORCE MAIN
PUMPING STATION
SIPHON AND SIPHON CHAMBER
DELINEATION OF SUB AREA
CITY DOCK OVERFLOW CHAMBER
CITY DOCK COLLECTION SYSTEM
SCALE IN FEET
PASSAIC VALLEY SEWERAGE COMMISSIONERS
CITY DOCK, NEWARK
PLAN OF COLLECTION SYSTEM
ELSON T. KILLAM ASSOCIATES, INC.
PLATE D

946200156



LEGEND

○ OVERFLOW

△ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

CITY DOCK, NEWARK

AVERAGE RAINFALL INTENSITY

VS.

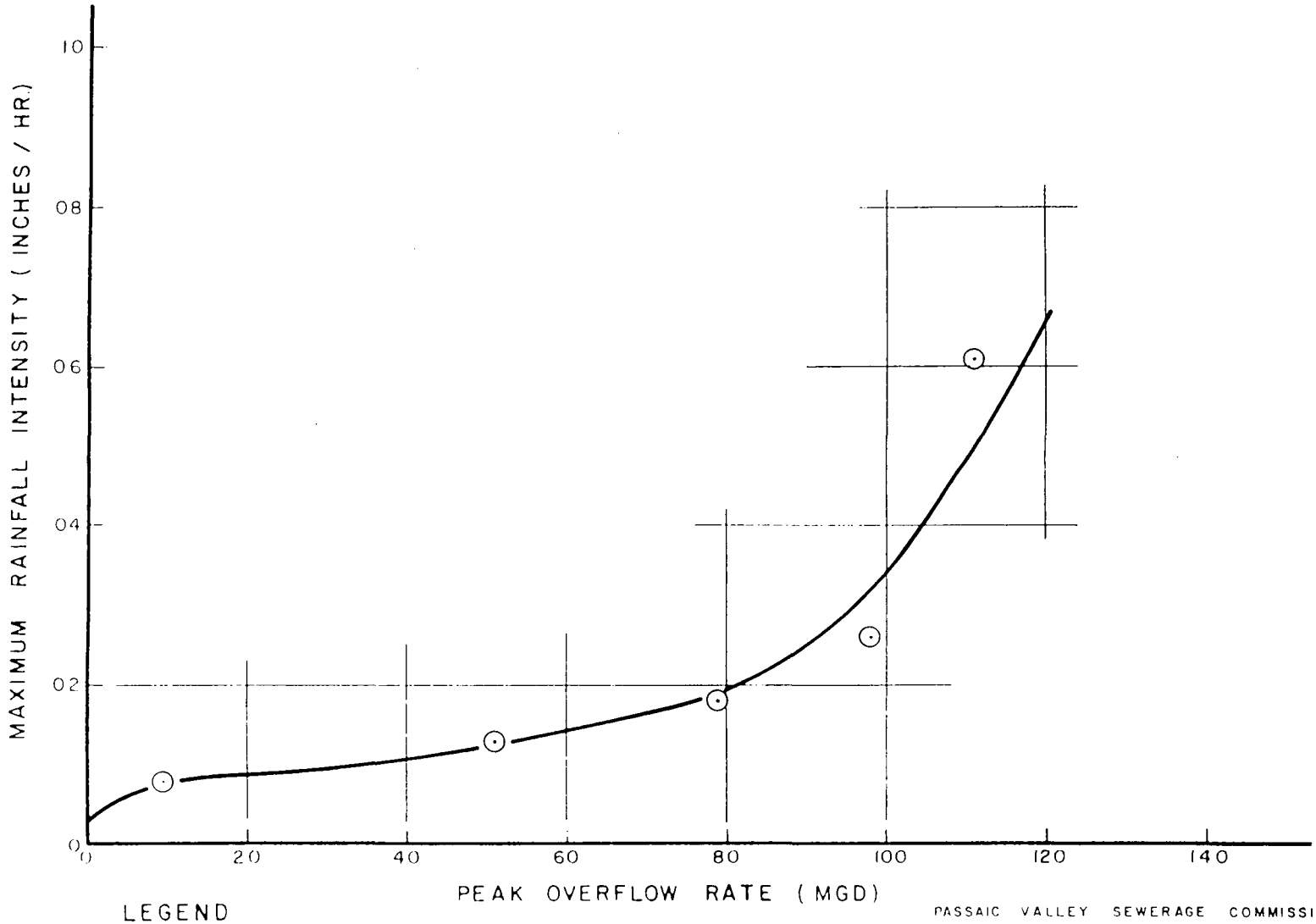
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE E

946200157



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

CITY DOCK, NEWARK

MAXIMUM RAINFALL INTENSITY
VS.
PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES INC.
Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY 07041

946200158

PLATE F

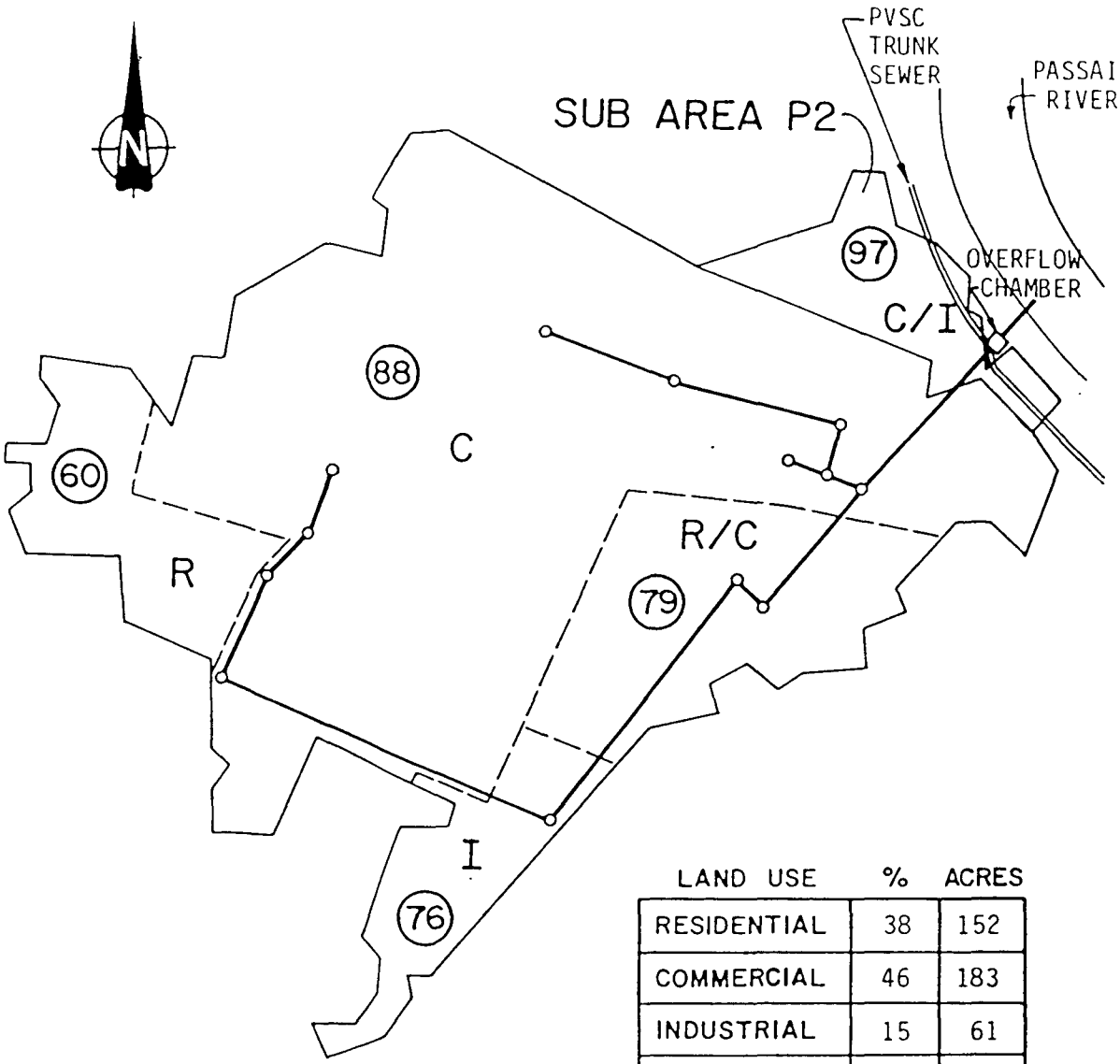
P.V.S.C. Reference # K-125 Date

Elson Killam Associates-Infiltration Studies November 27, 1974

City Dock-in front of Penn. Station. Newark-Manhole upstream from Siphon 3:03 P. M. 11/25/74 to 4:10 P. M., 11/26/74
24 Samples

Baseline

Sample #	pH	T.S.S.	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C./C.O.D.	* B.O.D	B.O.D/C.O.D.
1	7.4	670	290	43.3	708	150	21.2	439	62.0
2	7.5	128	110	85.9	224	78	34.8	99	44.2
3	7.6	76	76	100.0	196	54	27.6	--	----
4	7.6	54	52	96.3	152	51	33.6	115	75.7
5	7.4	64	64	100.0	156	43	27.6	54	34.6
6	7.3	30	30	100.0	176	45	25.6	137	77.8
7	7.3	14	14	100.0	212	40	18.9	40	18.9
8	7.3	4	4	100.0	144	50	34.7	8	5.6
9	7.3	12	12	100.0	116	33	28.4	23	19.8
10	7.3	6	6	100.0	80	31	38.8	No Depletion	
11	7.3	16	16	100.0	72	22	30.5	"	"
12	7.3	6	6	100.0	68	20	29.4	"	"
13	7.3	4	4	100.0	60	16	26.7	"	"
14	7.3	158	158	100.0	48	15	31.3	"	"
15	7.3	4	4	100.0	28	12	42.9	8	28.6
16	7.3	8	8	100.0	24	14	58.3	--	--
17	7.3	4	4	100.0	80	23	28.8	32	40.0
18	7.3	148	140	94.6	244	100	41.0	203	83.2
19	7.4	158	146	92.4	256	66	25.8	203	79.3
20	7.3	248	208	83.9	488	188	38.5	335	68.6
21	7.4	130	112	86.2	328	96	29.3	194	59.1
22	7.5	130	126	89.2	264	90	34.1	196	75.0
23	7.5	96	94	97.9	320	96	30.0	--	---
24	7.5	162	162	100.0	496	108	21.8	169	33.1
* These Figures have no Validity							31.4		



LAND USE	%	ACRES
RESIDENTIAL	38	152
COMMERCIAL	46	183
INDUSTRIAL	15	61
OPEN/PARKS	1	1
TOTAL	100	397

LEGEND

- MAIN INTERCEPTOR
- R RESIDENTIAL
- C COMMERCIAL
- I INDUSTRIAL
- O/P OPEN/PARK
- SUBCATCHMENT BOUNDARY
- (15) PERCENT IMPERMEABLE AREA WITHIN SUBCATCHMENT
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISSIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW FACILITY PLAN

LAND USE
CITY DOCK OVERFLOW
CITY OF NEWARK

Elson T. Killam Associates, Inc.
Environmental and Hydraulic Engineers
27 Bleeker Street Millburn New Jersey 07041

FIGURE N–011

946200160

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

JACKSON STREET, NEWARK
N-012

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY 07041

JACKSON STREET OVERFLOW CHAMBER

The Jackson Street Overflow serves a tributary area of approximately 83 acres. This area is provided with combined sewers. The theoretical average daily dry weather flow was determined to be approximately 0.5 MGD. Measured dry weather flow was found to be 1.0 MGD. This would indicate that the infiltration in this area is about 0.5 MGD.

Metering and sampling facilities were installed in this overflow chamber from May 1, 1975 through September 24, 1975. During this period of time, rainfall occurred on 35 occasions. The overflows which occurred at this chamber were controlled by the high tides in the Passaic River. During periods of high tide when the outfall line was surcharged, the tide gates were closed, resulting in no overflow on the majority of these occasions when rainfall occurred. Overflow only occurred when the tide level was low and a free outlet was provided from this chamber. Basically, the Jackson Street Overflow Chamber is operative only under limited and controlled low water conditions in the Passaic River, and the results observed at this chamber are similar to those found at Polk Street and Freeman Street.

Measurements under low tide conditions indicated that a peak discharge of approximately 0.6 MG did occur. Peak flow rates, however, as high as 67 MGD, were also measured. In general, it was found that overflow would occur under low tide conditions when rainfall intensity was in excess of about 0.07 to 0.08 inches per hour.

The Jackson Street overflow chamber is one of the few in the City of Newark system which is subjected to a potential of river water

intrusion into the PVSC interceptor sewer system during periods of high tide, or high river stage in the Passaic River. During the early period of our study, it was found that river water entered through the tide gates and into the sewer under dry weather flow conditions. However, corrective action has been taken by the staff of the PVSC to eliminate this condition.

This overflow chamber is an actively operated and controlled overflow chamber because of the necessity to avoid further surcharge of the interceptor sewer at critical time periods. The time duration of the overflows was not found to be excessive and, in general, was limited to the hours of rainfall when automatic overflow occurred. Likewise, the manual operation to control overflow was found to be for limited time periods, and generally as required to minimize system surcharge.

Samples taken during dry weather flow periods indicated that suspended solids ranged from about 52 mg/1 to 368 mg/1, with BOD concentration ranging from a low of 66 mg/1 to 339 mg/1.

Samples of the overflow were collected at this chamber. The results indicated a rather dilute overflow, with BOD ranging from about 50 to 75 mg/1, and TSS ranging from about 67 to 134 mg/1. This area appeared to have primarily domestic sewage and, as a result, the readings which were obtained are typical of a dilute mixture of storm water and sanitary sewage.

ELSON T. KILLAM ASSOCIATES, INC.

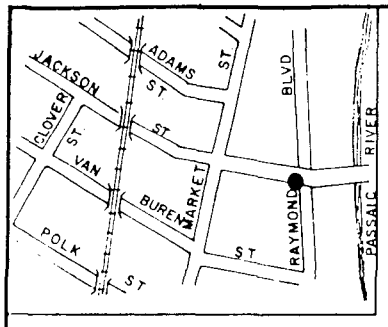
OVERFLOW DATA EXTRACT

JACKSON STREET OVERFLOW CHAMBER

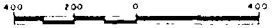
NEWARK

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	primarily residential with some (10 percent) industrial flow
Overflow Location (See Plate A):	on west side of intersection of Jackson Street with Raymond Boulevard
District Outlet Sewer (See Plates A and B):	56" x 64" elliptical brick sewer
Outfall to River (See Plates A and B):	56" x 64" elliptical brick sewer terminating in a 10'x 5' wooden box culvert
Outfall Condition:	clear and functioning
Tidal Effects:	tidal intrusions noted
Surcharge Effects:	surcharge observed due to low elevation of chamber with respect to Passaic River
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.



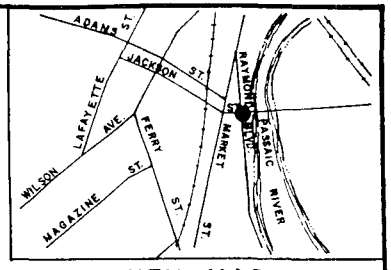
LOCATION PLAN



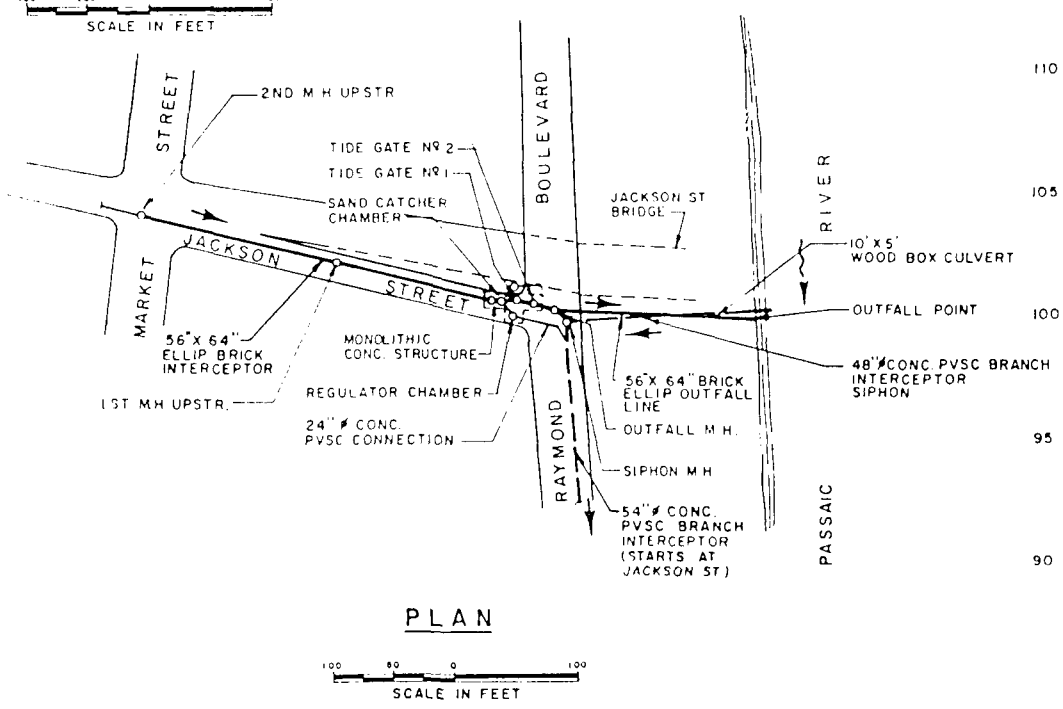
NOTE:
ALL SIDE PIPELINES EXCEPT PVSC BRANCH INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.

LEGEND:

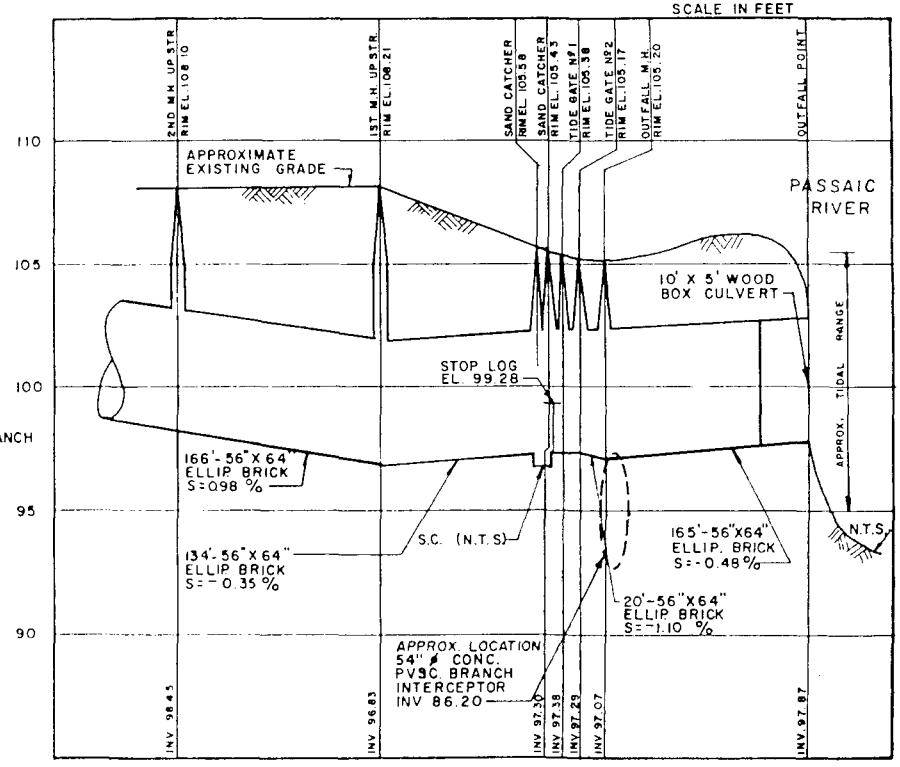
- DIRECTION OF FLOW
- SC = SAND CATCHER
- TG = TIDE GATE
- UP STR = UP STREAM
- DN STR = DOWN STREAM
- N.T.S. = NOT TO SCALE
- = OVERFLOW LOCATION



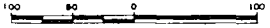
KEY MAP



PLAN



PROFILE



ALL ELEVATIONS BASED ON B.M. Nº PV1102 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

946200165

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER N-012

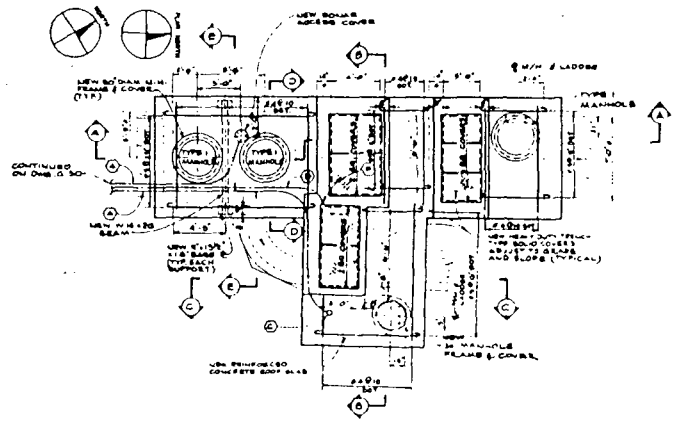
JACKSON STREET, NEWARK

PLAN AND PROFILE

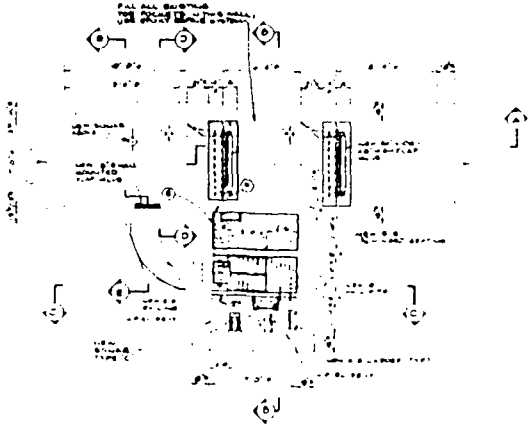
ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

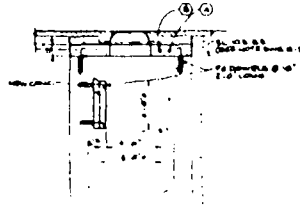
PLATE A



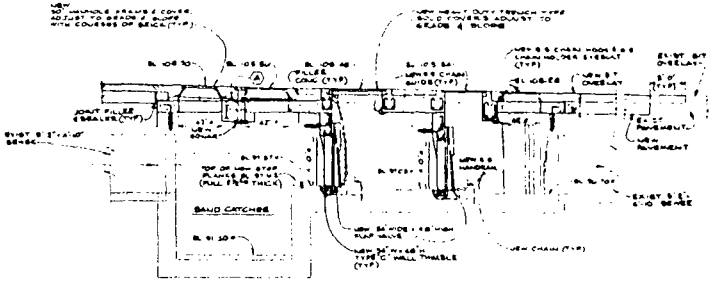
TOP SLAB PLAN



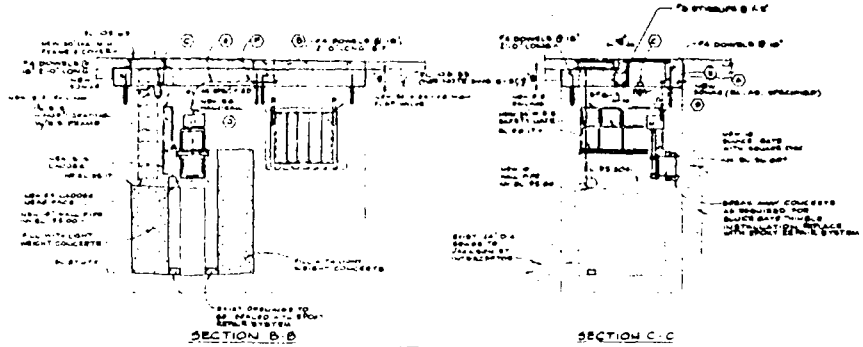
SECTIONAL PLAN AT EL 103.33



SECTION D-D



SECTION A-A

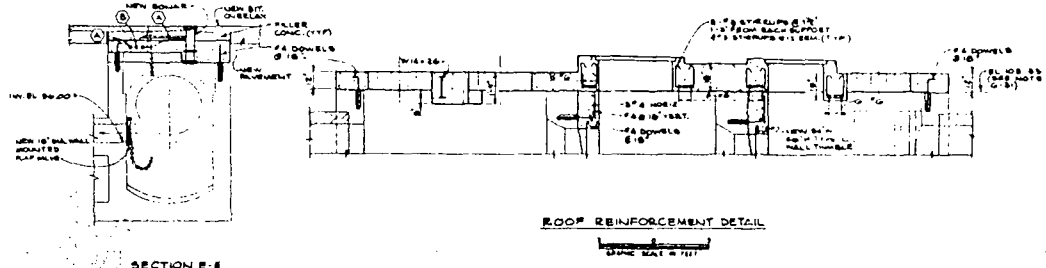


SECTION B-B

SECTION C-C

NOTES

1 GENERAL NOTES ON DWG. C-1
2 LEGEND ON DWG C-1
3 TRAFFIC PATTERNS, BARRICADES AND SIGNS ON DWG C-2 & C-3
4 MAIN ELECTRICAL NOTE ON DWG. E-50
5 MISCELLANEOUS DETAILS ON DWG E-1 & E-2
6 LIMITS OF PAVEMENT REPLACEMENT ON DWG C-50
7 ROOF DOME DETAIL ON DWG E-11
8 ALL LADDERS, DEFLECTORS, HANDRAILS, GRATINGS AND GRATING SUPPORTING MEMBERS SHALL BE STAINLESS STEEL.
9 TYPICAL MANHOLE DETAILS ON DWG E-5.



SECTION E-E

ROOF REINFORCEMENT DETAIL

PASSAIC VALLEY SEWERAGE COMMISSIONERS

EXTERNAL FACILITIES

REGULATOR MODIFICATIONS
STAGE I - NEWARK

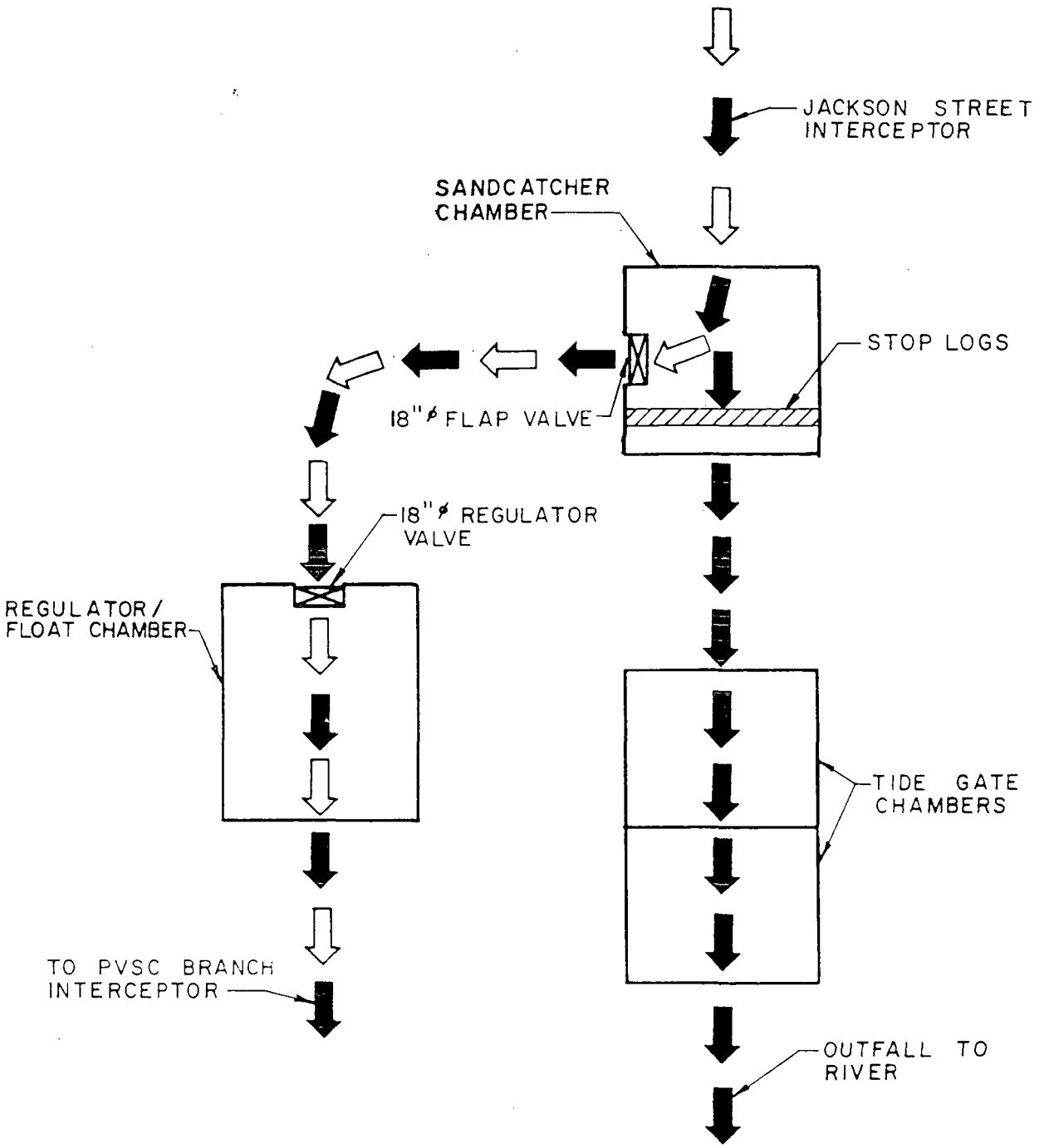
JACKSON STREET CONNECTION
FINAL ARRANGEMENT

CHARLES A MANGANARO

CONTRACT 489C DRAWING NO. B

946200166

PLATE B



LEGEND

DRY WEATHER FLOW

STORM FLOW / OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

JACKSON STREET, NEWARK

SCHEMATIC

ELSON T. KILLAM ASSOCIATES INC

Environmental and Hydraulic Engineers

946200167

JACKSON STREET OVERFLOW CHAMBER N-012 (Cont'd.)

Condition of Regulator:	appears inoperable
Special Actions Required:	all combined flow diverted manually to river by closing flap valve when heavy rainfalls are experienced
Overflow Stop Log/Dam Condition:	stop logs located at downstream end of sand catcher, just before opening to first tide gate chamber
Tide Gate Condition:	both tide gates noted as leaking

Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.13 square inches- 83 acres
Average Daily Flow	
Seasonal Dry Weather:	1.06 MGD
Seasonal Wet Weather:	1.06 MGD (estimated)
Estimated Combined Flow to Produce an Overflow:	11.7 MGD
Approximate Length of Combined Sewers Serving District:	17,500 linear feet

NOTES

PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS DRAWN 2000 FEET BETWEEN GRIDS.

LEGEND

- MUNICIPAL BOUNDARY
- COUNTY BOUNDARY
- MANHOLE
- TERMINAL MANHOLE
- PVBC TRUNK SEWER
- LOCAL SEWER
- FORCE MAIN
- PUMPING STATION
- SIPHON AND SIPHON CHAMBER
- DELINEATION OF SUB AREA
- JACKSON STREET OVERFLOW CHAMBER
- JACKSON STREET COLLECTION SYSTEM

PASSAIC VALLEY SEWERAGE COMMISSIONERS

JACKSON STREET, NEWARK

PLAN OF COLLECTION SYSTEM

-1000 0 1000 2000

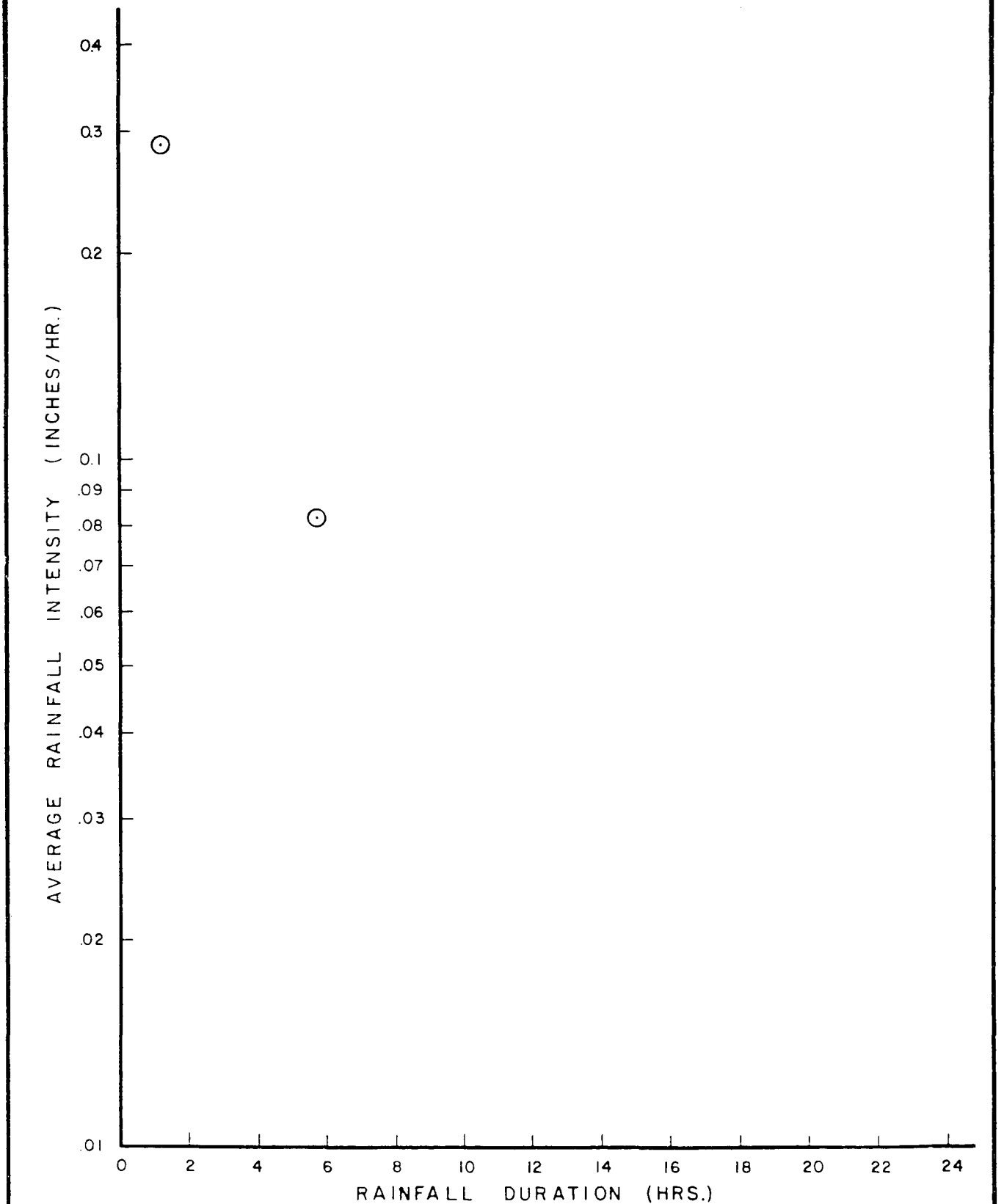
SCALE IN FEET

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE D

946200169



PASSAIC VALLEY SEWERAGE COMMISSIONERS

JACKSON STREET, NEWARK

AVERAGE RAINFALL INTENSITY

VS.

RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE E

946200170

PVSC Reference # B-65 Date: 2/19/75

Elson T. Killam Associates - Infiltration Studies - Sampler # 401 Set # 53
Jackson Street, Newark - In sandcatcher Chamber # 039/N-012
1135-2/13/75 to 1415-2/14/75

Baseline

24 SAMPLES

SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC/COD	BOD	BOD/COD
1	8.1	280	144	51.4	194	56	28.8	87	44.8
2	7.9	222	126	56.8	186	84	45.1	82	44.1
3	7.5	236	138	58.5	351	105	29.9	186	53.1
4	7.5	230	144	62.7	440	132	30.0	205	46.7
5	7.5	246	160	65.1	473	150	31.7	207	48.3
6	7.4	230	156	67.8	784	210	26.8	212	27.1
7	7.7	368	276	75.1	598	200	33.4	314	52.5
8	7.7	294	218	74.2	533	204	38.3	328	61.6
9	8.0	304	240	79.0	570	200	35.1	306	53.7
10	7.7	282	214	75.9	513	156	30.4	246	48.0
11	7.4	308	224	72.8	416	130	31.2	219	52.4
12	7.1	216	140	64.8	267	84	31.4	142	53.2
13	7.4	230	168	73.2	295	48	16.3	82	27.8
14	7.2	350	306	87.5	279	112	40.2	135	48.4
15	7.5	146	140	95.9	206	63	30.6	92	44.6
16	7.9	76	58	76.3	159	57	35.0	82	58.2
17	8.0	64	62	96.8	141	48	34.0	66	46.8
18	8.0	52	50	96.2	129	52	40.3	71	57.3
19	7.8	66	62	94.0	109	48	44.1	90	82.6
20	7.8	68	58	85.3	135	42	33.6	85	68.0
21	8.2	164	146	89.0	342	155	41.7	334	91.2
22	8.2	238	202	85.0	501	150	29.9	300	59.9
23	7.5	154	126	81.8	376	105	27.9	186	49.5
24	7.8	112	98	87.5	271	60	22.1	213	78.7
							31.4		54.1

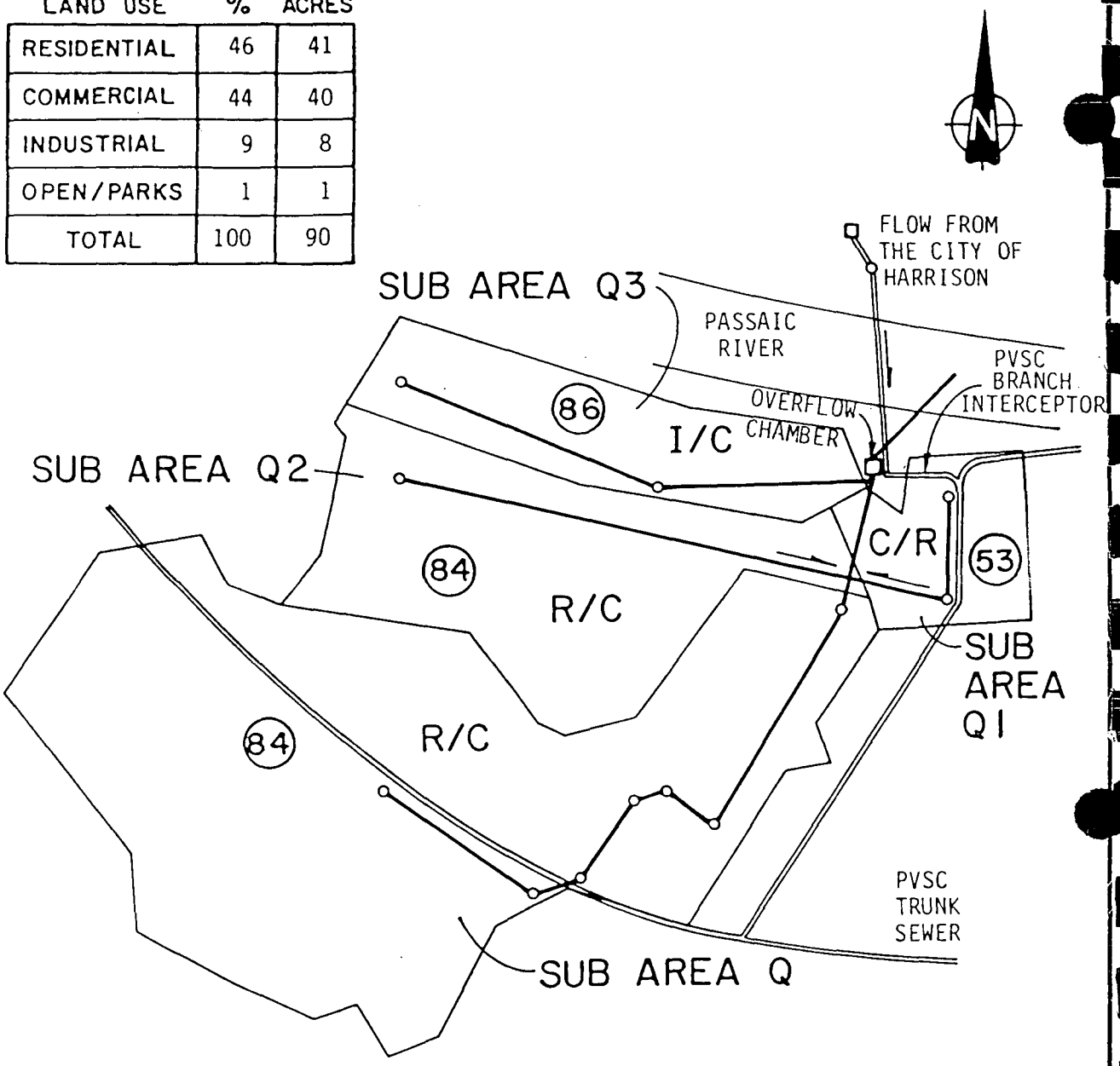
P.V.S.C. Reference # K - 51 Date 11/13/74

Elson Killam Associates-Infiltration Studies
Jackson Street, Newark - First manhole upstream
from sandcatcher 10:10 A.M. 11/12/74 to 10:40 A.M. 11/13/74
17 samples

BASELINE

Sample #	pH	T.S.S.	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C./C.O.D.	B.O.D.	B.O.D./C.O.D.
¼ fill 1	7.3	392	340	86.7	784	280	35.7	389	49.6
2	Not enough sample for analysis								
3	"	" "	"	"					
4	"	" "	"	"					
5	"	" "	"	"					
1/3 fill 6	7.4	568	480	84.5	707	232	32.8	560	79.4
1/3 fill 7	7.3	372	364	97.8	751	208	27.7	492	65.5
8	7.3	326	294	90.2	659	255	38.7	532	80.7
9	7.1	296	96	32.4	630	270	42.8	435	69.1
10	6.8	544	476	87.5	679	325	47.7	390	57.5
11	6.6	964	644	66.8	970	276	28.5	633	66.2
12	7.0	396	268	67.8	465	104	22.4	274	59.0
13	7.0	188	172	91.5	275	108	39.3	129	47.0
14	7.0	304	224	73.7	315	129	41.0	194	61.5
15	6.9	936	280	29.9	206	87	27.6	99	48.0
16	7.0	680	168	24.7	170	75	44.1	85	50.0
17	6.9	132	96	72.7	145	46	31.7	57	39.3
18	7.1	130	38	29.2	101	38	37.6	58	57.5
19	7.2	110	62	24.7	105	34	32.4	63	60.0
20	7.3	76	56	73.7	125	50	40.0	99	79.2
21	7.6	140	126	90.0	259	102	39.4	190	73.3
22	NO	SAMPLE							
23	NO	SAMPLE							
24	NO	SAMPLE		AVERAGE			35.8		61.4

LAND USE	%	ACRES
RESIDENTIAL	46	41
COMMERCIAL	44	40
INDUSTRIAL	9	8
OPEN/PARKS	1	1
TOTAL	100	90



LEGEND

- MAIN INTERCEPTOR
- R RESIDENTIAL
- C COMMERCIAL
- I INDUSTRIAL
- O/P OPEN/PARK
- SUBCATCHMENT BOUNDARY
- (15) PERCENT IMPERMEABLE AREA WITHIN SUBCATCHMENT
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISSIONERS

NEW JERSEY

COMBINED SEWER OVERFLOW FACILITY PLAN

LAND USE
JACKSON STREET OVERFLOW
CITY OF NEWARK

Elson T. Killam Associates, Inc.
Environmental and Hydraulic Engineers
27 Bleeker Street Millburn New Jersey 07041

FIGURE N-012

946200173

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

POLK STREET, NEWARK
N-013

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 40 ESSEX STREET MILLBURN NEW JERSEY 0704

POLK STREET OVERFLOW CHAMBER

The Polk Street overflow chamber serves a tributary area of approximately 199 acres. This area is served with combined sewers. The theoretical average daily flow in the district was determined to be 1.3 MGD. Measurements indicated the average daily flow to be 1.6 MGD. This indicates an infiltration of only about 0.3 MGD.

Metering and sampling facilities were installed and maintained in this overflow chamber from February 2, 1975 through August 7, 1975. During this period of time, 44 rainfalls occurred. Overflows were measured or observed on 28 occasions. Overflows were found to occur whenever the rainfalls were in excess of about 0.07 inches per hour provided that there was no tidal effect upon the outfall. The overflow from this chamber was generally controlled by the high tide in the Passaic River. High river stages resulted in surcharge which closed the tide gates and prevented outflow from the chamber on many occasions during periods of rainfall. Subsequently, this overflow chamber is not typical of most which have a fairly free outlet in the City of Newark. The Polk Street outlet, like the Freeman Street and Jackson Street outlets, is located in the downstream reach of the Passaic River and is closest to the treatment plant.

This overflow chamber is an actively operated and controlled overflow chamber because of the necessity to avoid further surcharge of the interceptor sewer at critical time periods. The time duration of the overflows was not found to be excessive and, in general, was limited to the hours of rainfall when automatic overflow occurred. Likewise, the manual operation to control overflow was found to be for limited

time periods, and generally as required to minimize system surcharge.

However, during the period when overflow did occur at this chamber, it was found that the volume was not excessive and a peak measurement of about 3.5 MG was made. It appears that the storm flow in this district stores in the rather large combined sewer which passes through this chamber. Subsequently, most of this flow enters the PVSC system after the storm, and this occurs particularly when little overflow can occur from this chamber because of high tide conditions.

Peak storm flow rates of as high as 62 MGD were recorded, but these were of short-term duration, coincident with the period of intense rainfall.

It is estimated that overflow will occur from 45 to 60 times at this chamber, based upon rainfall occurrences ranging from 70 to 90 times yearly.

Sampling of the sewage during the dry weather periods indicated that suspended solids ranged from less than 10 mg/l to 182 mg/l, and BOD concentrations from 73 mg/l to 677 mg/l.

The overflow waste characteristics were indicative of typical domestic sewage with the effective dilution indicated by low BOD's of 25 mg/l and as high as 144 mg/l. No reliable readings were obtained of the suspended solids, but visual observations indicated fairly dilute overflows at this chamber.

OVERFLOW DATA EXTRACT

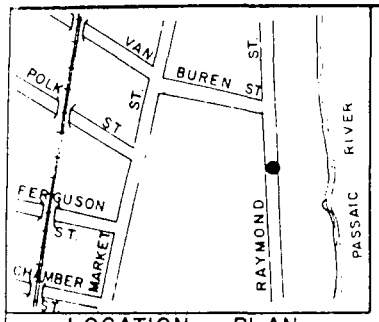
POLK STREET OVERFLOW CHAMBER

NEWARK

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	residential and highly industrialized (35 percent of flow) area
Overflow Location (See Plate A):	in Raymond Blvd., approximately 300 feet south of intersection of Raymond Blvd. and Van Buren Street
District Outlet Sewer (See Plates A and B):	84" X 96" elliptical brick sewer
Outfall to River (See Plates A and B):	84" X 96" elliptical brick sewer
Outfall Condition:	clear of debris and functioning
Tidal Effects:	some tidal intrusions experienced
Surcharge Effects:	surcharged observed*
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.

*due to capacity limitations and/or tide gate closure during high tide conditions



LOCATION PLAN

400 200 0 400

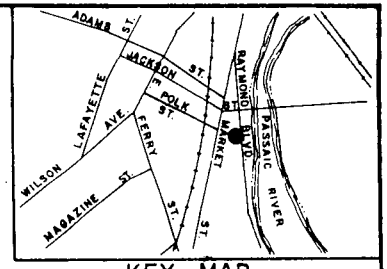
SCALE IN FEET

NOTE:

ALL SIDE PIPELINES EXCEPT PVSC BRANCH INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY.

LEGEND:

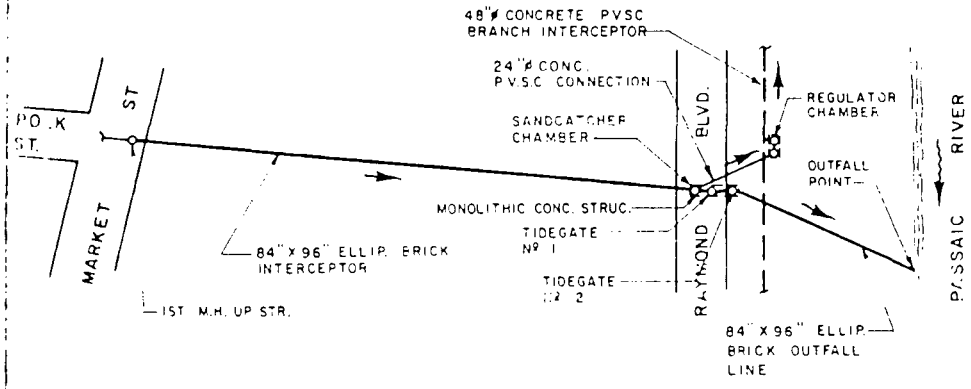
→ DIRECTION OF FLOW
S.C. = SAND CATCHER
T.G. = TIDE GATE
UP STR. = UP STREAM
DN. STR. = DOWN STREAM
N.T.S. = NOT TO SCALE
● = OVERFLOW LOCATION



KEY MAP

2000 1000 0 2000

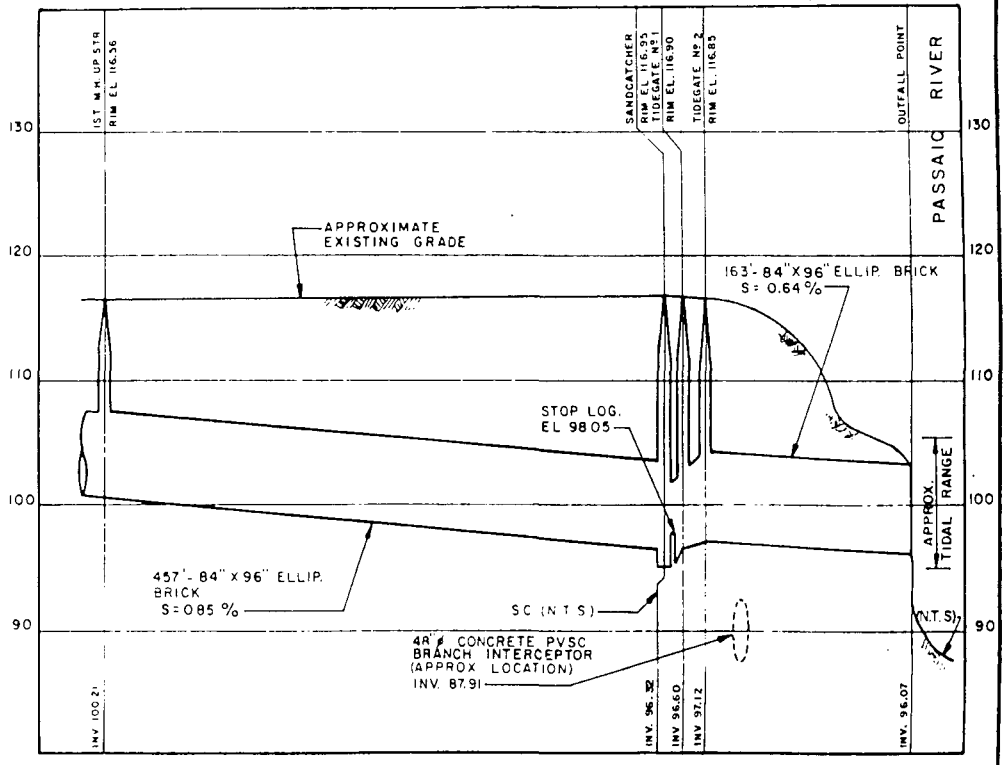
SCALE IN FEET



PLAN

100 50 0 100

SCALE IN FEET



PROFILE

HORIZONTAL 100 50 0 100

SCALE IN FEET

VERTICAL 10 8 6 4 2 0 10

SCALE IN FEET

ALL ELEVATIONS BASED ON N.G.V.D. 1929 AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX

946200178

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER N-013

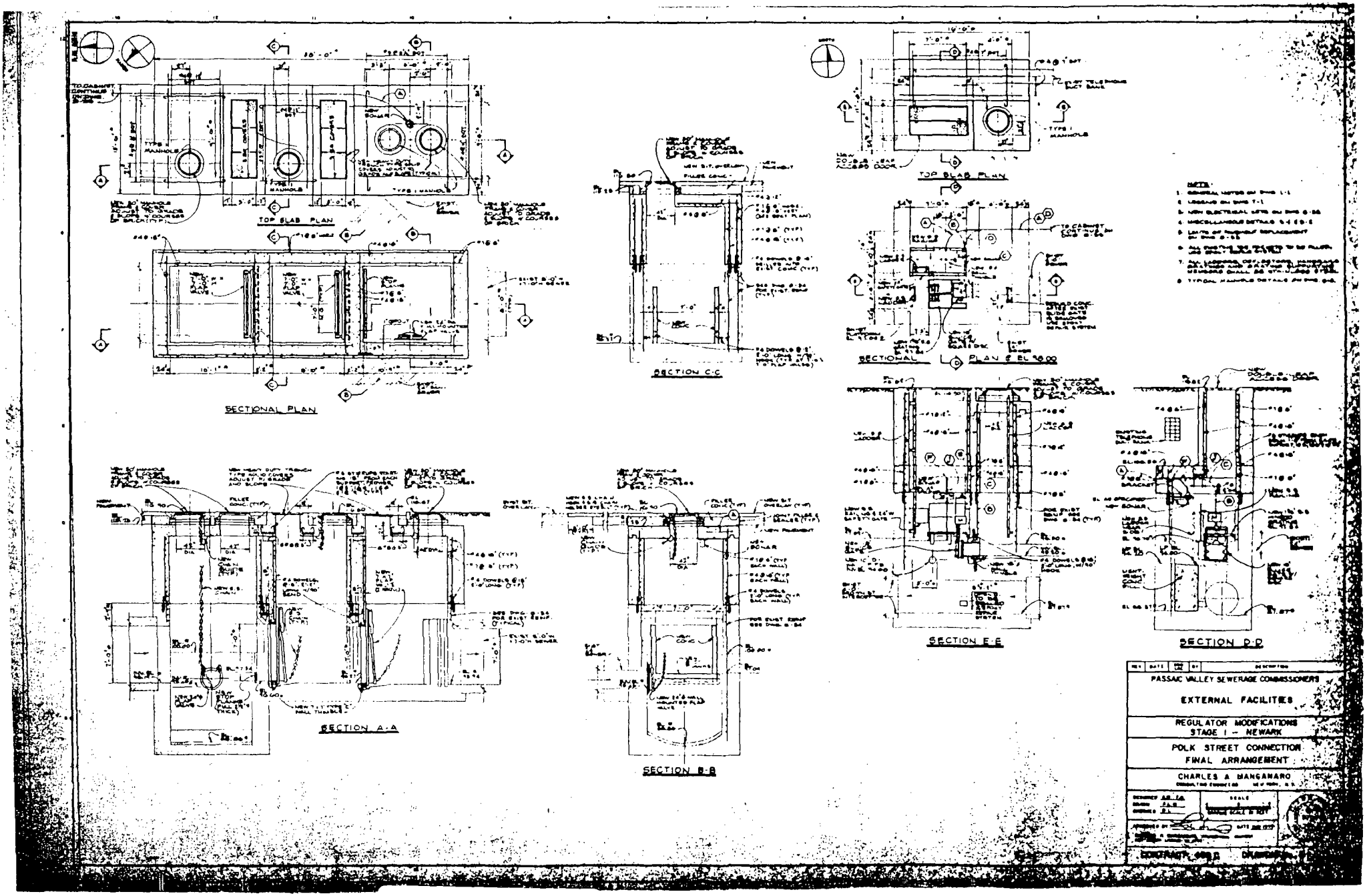
POLK STREET, NEWARK

PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

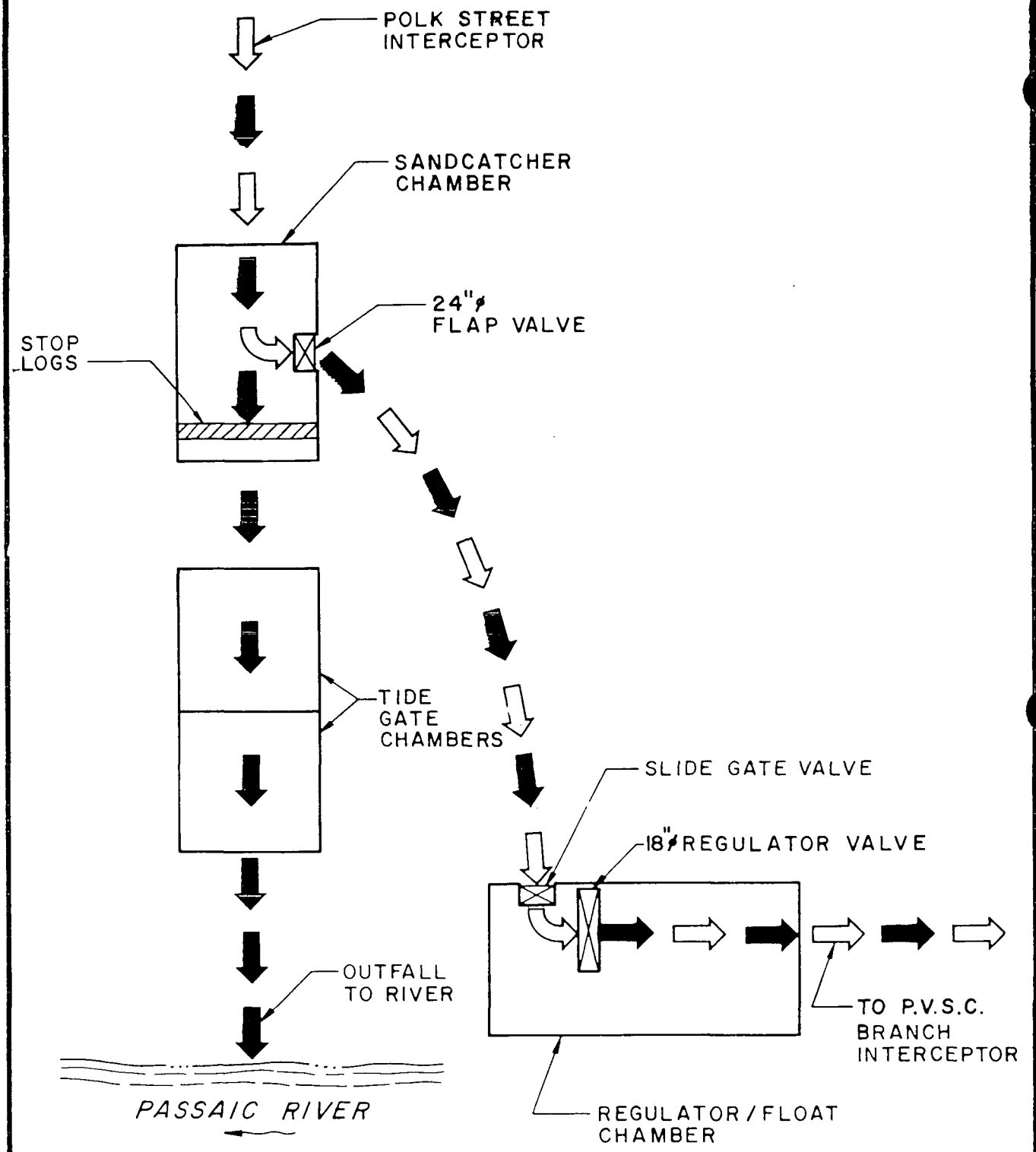
Environmental and Hydraulic Engineers

PLATE A



946200179

PLATE B



PASSAIC VALLEY SEWERAGE COMMISSIONERS

POLK STREET, NEWARK

SCHEMATIC

ELSON T. KILLAM ASSOCIATES INC.

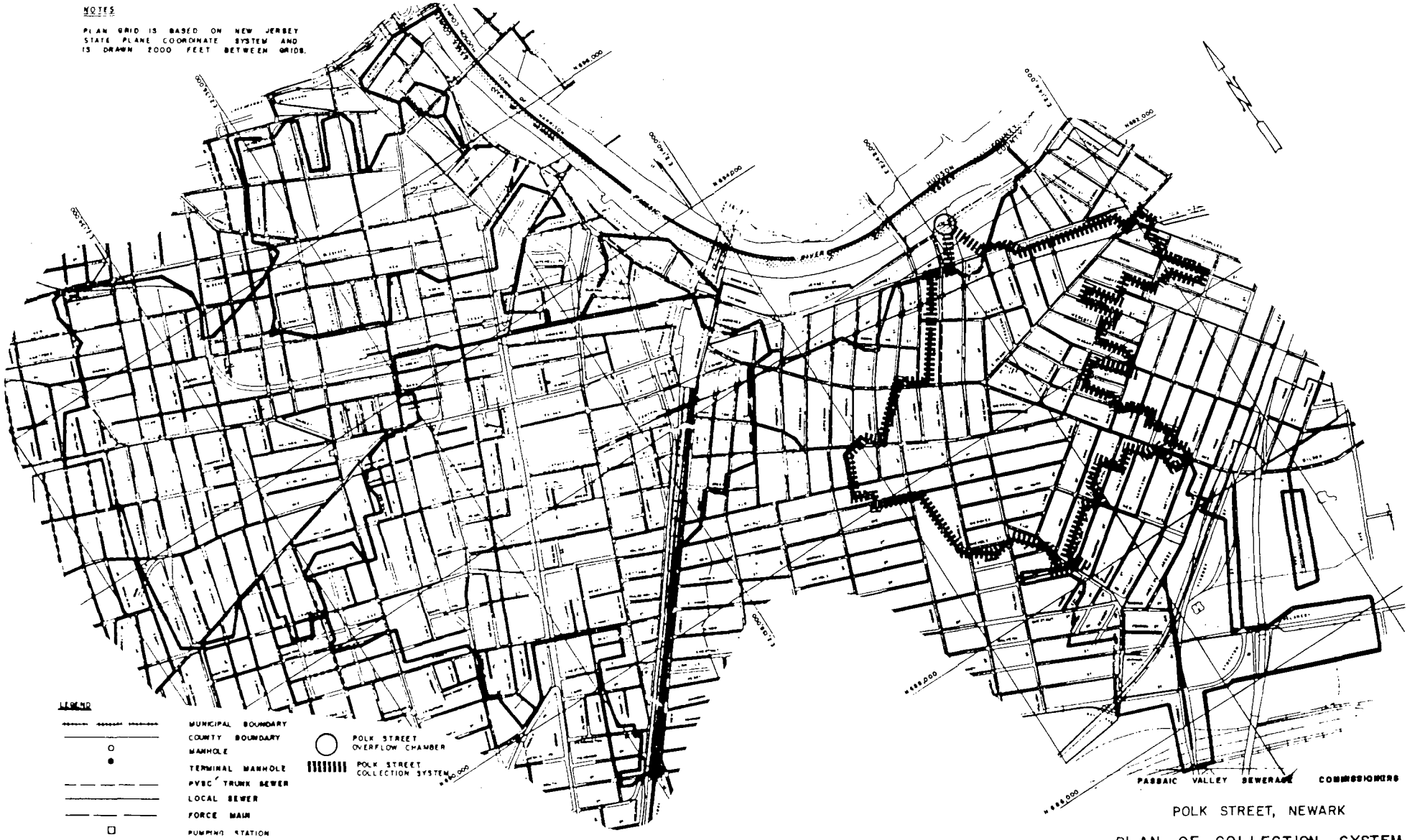
Environmental and Hydraulic Engineers

POLK STREET OVERFLOW N-013 (Cont'd)

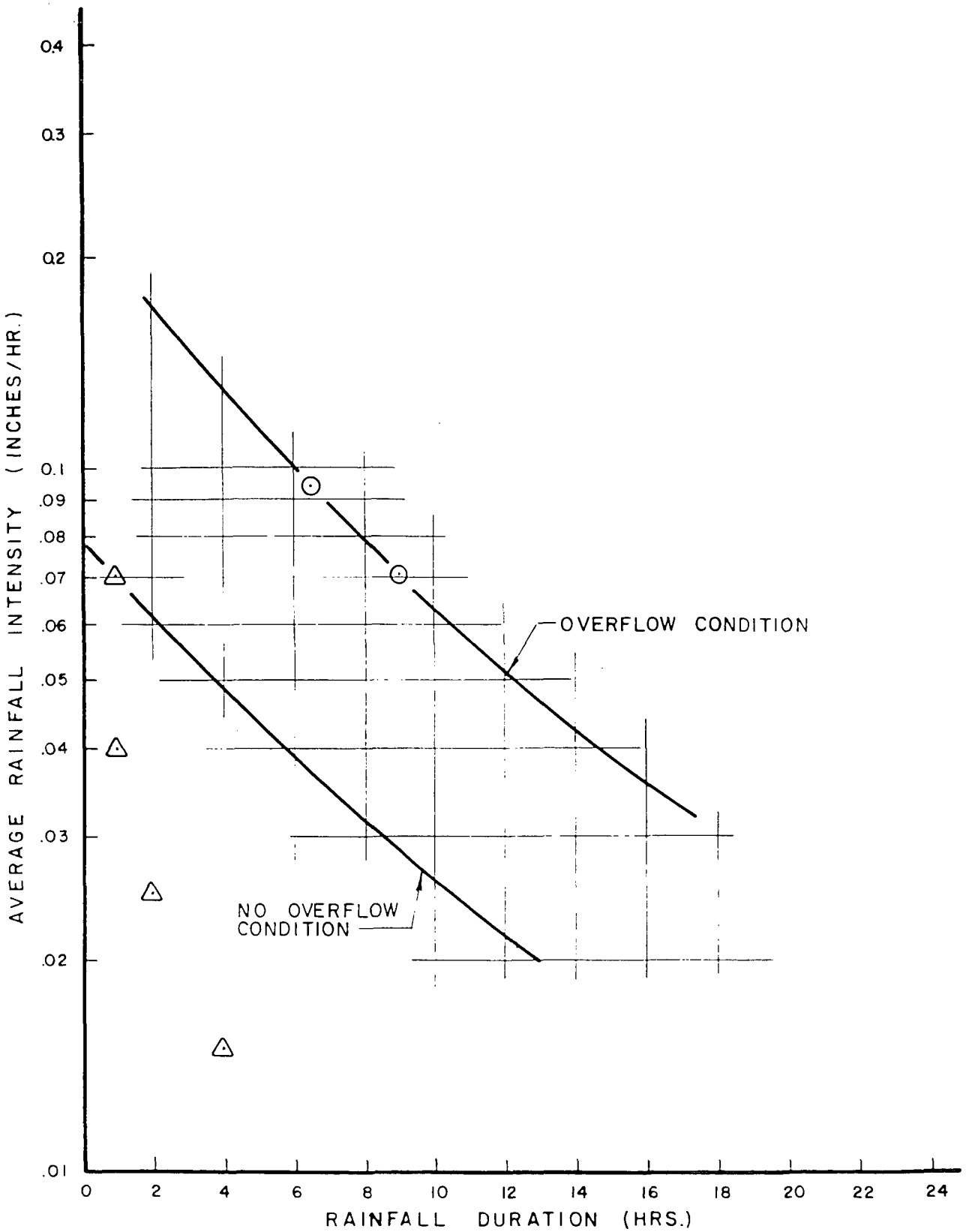
Condition of Regulator:	appears inoperable
Special Actions Required:	all combined flow is diverted to river by closing flap gate in sand catcher chamber, whenever heavy combined flows are experienced.
Overflow Stop Log/Dam Condition:	stop logs located on downstream side of sand catcher before portal to first tide gate chamber
Tide Gate Condition:	both tide gates leaking
Note:	During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.311 square miles - 199 acres
Average Daily Flow	
Seasonal Dry Weather:	1.63 MGD
Seasonal Wet Weather:	1.66 MGD
Estimated Combined Flow to Produce an Overflow:	10.5 MGD
Approximate Length of Combined Sewers Serving District:	45,200 linear feet


NOTES
PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS DRAWN 2000 FEET BETWEEN GRIDS.
LEGEND
MUNICIPAL BOUNDARY
COUNTY BOUNDARY
MANHOLE
TERMINAL MANHOLE
PVSC TRUNK SEWER
LOCAL SEWER
FORCE MAIN
PUMPING STATION
SIPHON AND SIPHON CHAMBER
DELINEATION OF SUB AREA
POLK STREET OVERFLOW CHAMBER
POLK STREET COLLECTION SYSTEM
PASSAIC VALLEY SEWERAGE COMMISSIONERS
POLK STREET, NEWARK
PLAN OF COLLECTION SYSTEM
SCALE IN FEET
ELSON T. KILLAM ASSOCIATES, INC.
PLATE D

946200182



PASSAIC VALLEY SEWERAGE COMMISSIONERS

POLK STREET, NEWARK

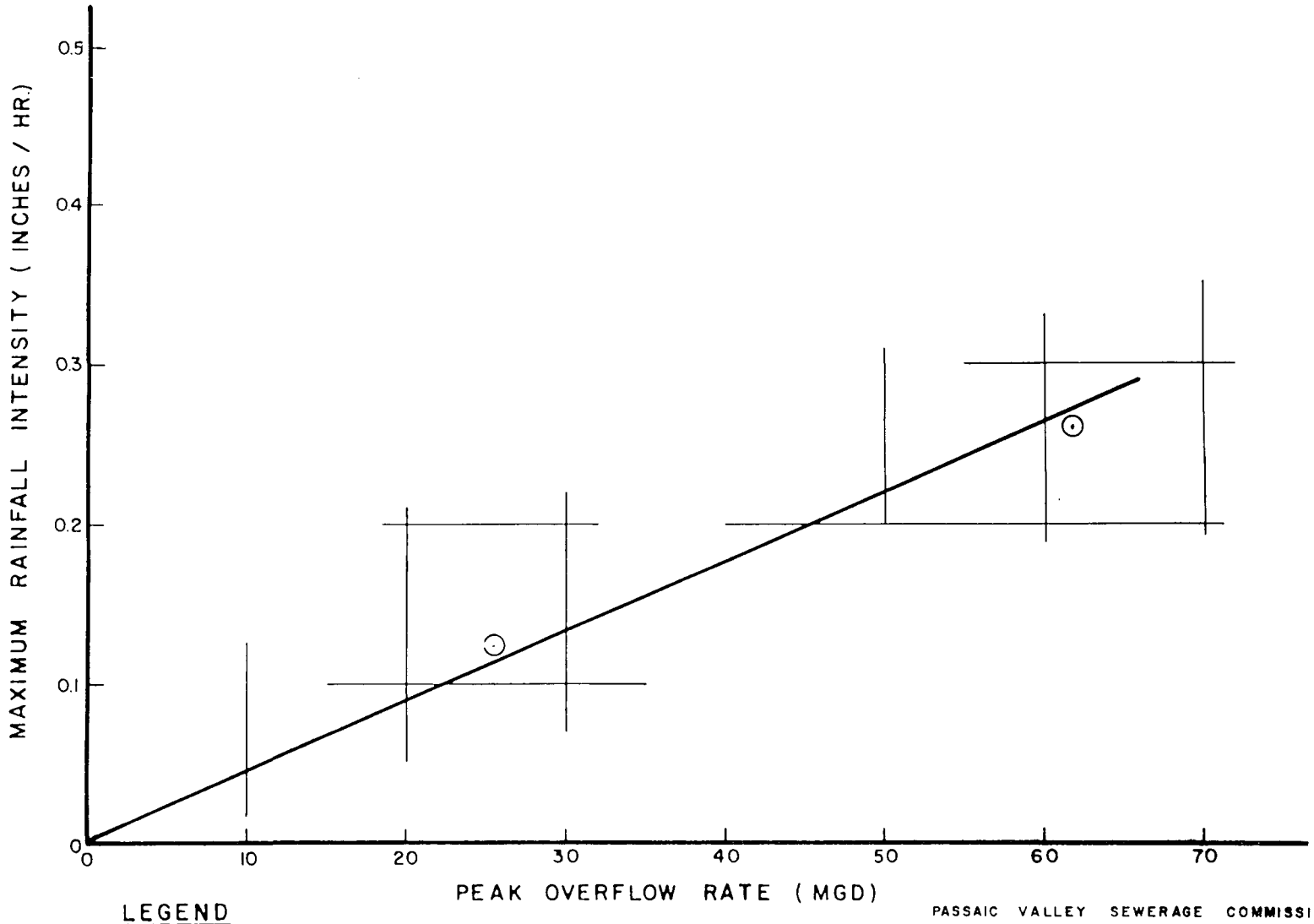
AVERAGE RAINFALL INTENSITY VS. RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE E

946200183



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

POLK STREET, NEWARK

MAXIMUM RAINFALL INTENSITY
VS.
PEAK OVERFLOW RATE

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers 46 ESSEX STREET, MILLBURN, NEW JERSEY 07041

PLATE F

946200184

P.V.S.C. Reference # K127

Date November 27, 1974

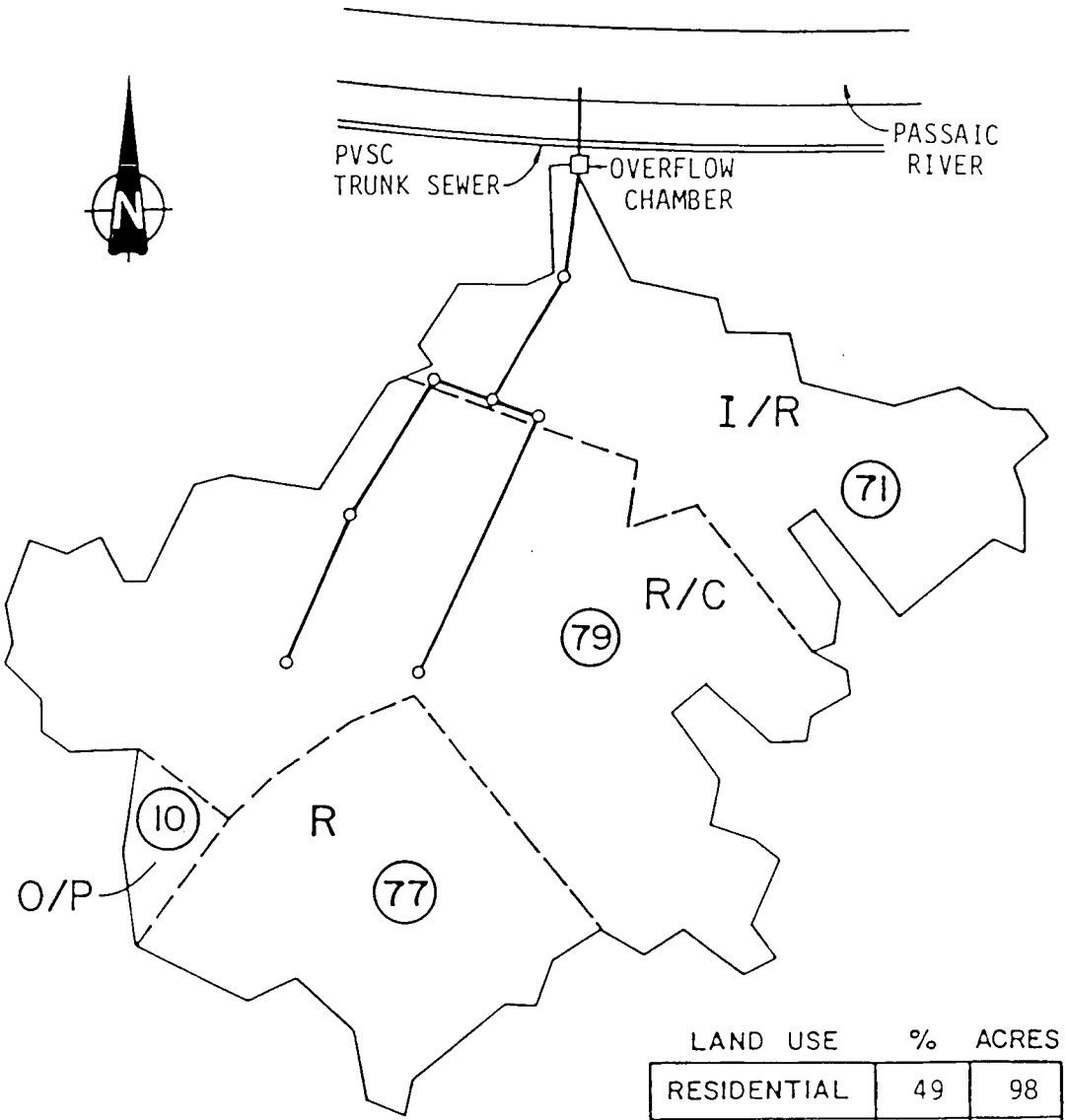
Elson Killam Associates-Infiltration Studies

Polk Street, Newark-First manhole upstream from Sandcatcher
3:25 P. M. 11/25/74 to 4:00 P. M. 11/26/74

24 Samples

Baseline

Sample #	pH	T.S.S.	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C./C.O.D.	B.O.D	B.O.D/C.O.D.
1	7.4	14	14	100.0	356	117	32.9	259	72.8
2	8.5	72	60	83.3	352	108	30.7	217	61.6
3	7.6	4	4	100.0	420	112	26.7	242	57.6
4	7.2	22	18	81.8	380	136	35.8	240	63.2
5	7.0	80	80	100.0	456	165	36,2	334	73.2
6	7.0	36	36	100.0	416	148	35.6	307	73.8
7	7.0	6	6	100.0	452	225	49.8	414	91.6
8	7.5	4	4	100.0	1248	500	40.1	677	54.2
9	7.4	6	6	100.0	324	111	34.3	242	74.7
10	7.6	10	10	100.0	276	108	39.1	73	-
11	7.4	18	18	100.0	204	66	32.4	195	-
12	7.4	24	24	100.0	168	52	31.0	178	-
13	7.3	36	36	100.0	132	44	33.3	134	-
14	7.3	16	16	100.0	152	50	32.3	157	-
15	7.3	10	10	100.0	164	46	28.0	154	-
16	8.0	26	26	100.0	212	54	25.5	200	-
17	8.5	118	118	100.0	348	111	31.9	268	77.0
18	8.3	68	54	79.4	496	180	36.3	324	65.3
19	7.9	56	52	92.9	400	100	25.0	238	59.5
20	8.0	52	52	100.0	472	120	25.4	263	55.7
21	8.2	182	130	71.4	716	152	21.2	340	47.5
22	8.1	148	146	98.6	592	120	20.3	285	48.1
23	8.1	56	54	96.4	476	120	25.2	78	-
24	7.1	40	30	75.0	428	144	33.6	444	-
							31.8		



SUB AREA R

LAND USE	%	ACRES
RESIDENTIAL	49	98
COMMERCIAL	29	49
INDUSTRIAL	25	50
OPEN/PARKS	2	4
TOTAL	100	201

LEGEND

- MAIN INTERCEPTOR
- R RESIDENTIAL
- C COMMERCIAL
- I INDUSTRIAL
- O/P OPEN/PARK
- SUBCATCHMENT BOUNDARY
- (15) PERCENT IMPERMEABLE AREA WITHIN SUBCATCHMENT
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISSIONERS

NEW JERSEY

COMBINED SEWER OVERFLOW FACILITY PLAN

LAND USE
POLK STREET OVERFLOW
CITY OF NEWARK

Elson T. Killam Associates, Inc.
Environmental and Hydraulic Engineers
27 Bleeker Street Millburn New Jersey 07041

FIGURE N-013

REPORT UPON

OVERFLOW ANALYSIS

TO

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

FREEMAN STREET, NEWARK
N-014

1976

ELSON T KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 48 ESSEX STREET MILLBURN NEW JERSEY 07041

FREEMAN STREET OVERFLOW CHAMBER

The Freeman Street overflow chamber serves a tributary area of approximately 149 acres. This drainage area is also provided with combined sewers. The theoretical average daily dry weather flow in this district was determined to be 0.5 MGD. Measurements of the dry weather flow resulted in readings of 1.0 MGD to about 1.2 MGD. Therefore, the infiltration appears to be excessive, ranging from 0.5 to 0.7 MGD. This district is 75 percent residential and about 25 percent industrial in terms of flow contributions.

Metering and sampling facilities were installed in this chamber from February 23, 1975 to April 26, 1975. Fourteen rainfalls were measured and overflows were determined to have occurred on only five occasions. The reason for this low overflow frequency is that the period of observation was one in which the rainfalls were relatively low, except for two storms.

Overflows were found to occur whenever the rainfalls were in excess of about 0.06 to 0.07 inches per hour.

This overflow chamber, like Polk Street, is affected by high tide conditions in the Passaic River. The resultant backwater prevented overflow on numerous occasions, and this was observed during the period of study.

Some tidal intrusion was observed during the initial stages of our studies, but by adjusting the overflow weir in the chambers and repairing the tide gates, the inflow from the Passaic River has been stopped.

This overflow chamber is an actively operated and controlled overflow chamber because of the necessity to avoid further surcharge of the interceptor sewer at critical time periods. The time duration of the overflows was not found to be excessive and, in general, was limited to the hours of rainfall when automatic overflow occurred. Likewise, the manual operation to control overflow was found to be for limited time periods, and generally as required to minimize system surcharge.

Peak flow rates of up to 16 MGD were recorded at times when high tides were not prevalent during a rainfall, resulting in an overflow volume of only about 2.4 MG.

Sampling of the sewage during the dry weather periods indicated that total suspended solids ranged from less than 10 mg/l to 388 mg/l, and BOD concentrations ranged from 17 mg/l to 539 mg/l.

The overflow waste characteristics indicated that the average BOD ranged from about 63 mg/l to 359 mg/l. The suspended solids were found to be fairly high, with readings ranging from a low of 225 mg/l to a high of 690 mg/l, indicative of the flushing action resulting from high storm flows in the collection system.

ELSON T. KILLAM ASSOCIATES, INC.

OVERFLOW DATA EXTRACT

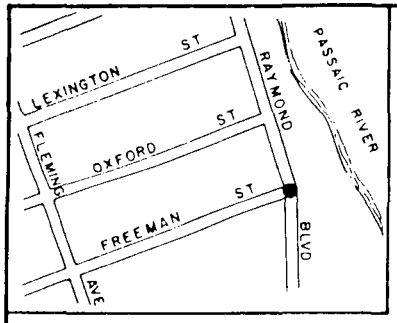
FREEMAN STREET OVERFLOW CHAMBER

NEWARK

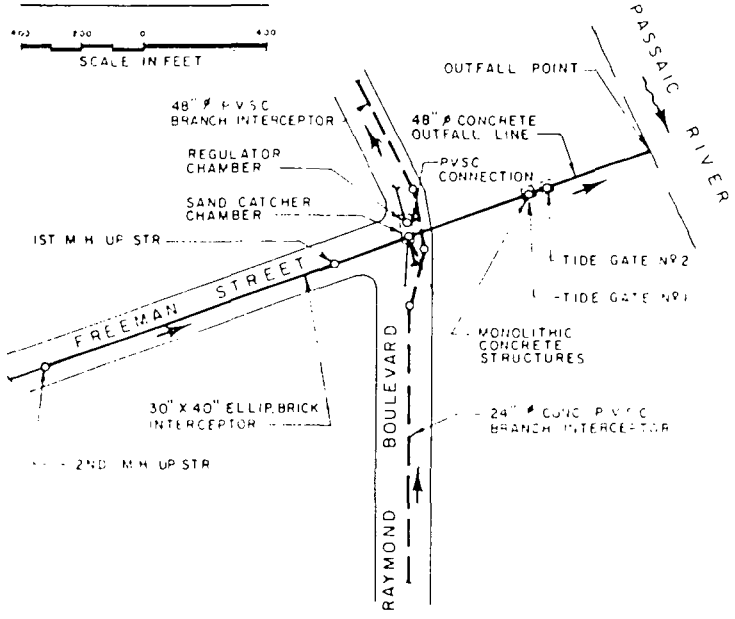
Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	primarily residential with some (25 percent) industrial flow
Overflow Location (See Plate A):	in center of Raymond Blvd., at intersection of Raymond Blvd. and Freeman St.
District Outlet Sewer (See Plates A and B):	30" X 40" vertical elliptical brick sewer
Outfall to River (See Plates A and B):	48" diameter concrete sewer
Outfall Condition:	clear of debris and functioning
Tidal Effects:	some tidal intrusions noted
Surcharge Effects:	surcharge observed*
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.

*due to capacity limitations and/or tide gate closure during high tide conditions



LOCATION PLAN



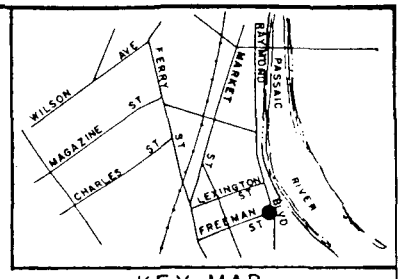
PLAN

NOTE

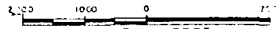
ALL SIDE PIPELINES EXCEPT PVSC BRANCH INTERCEPTOR ARE OMITTED IN PROFILE FOR CLARITY

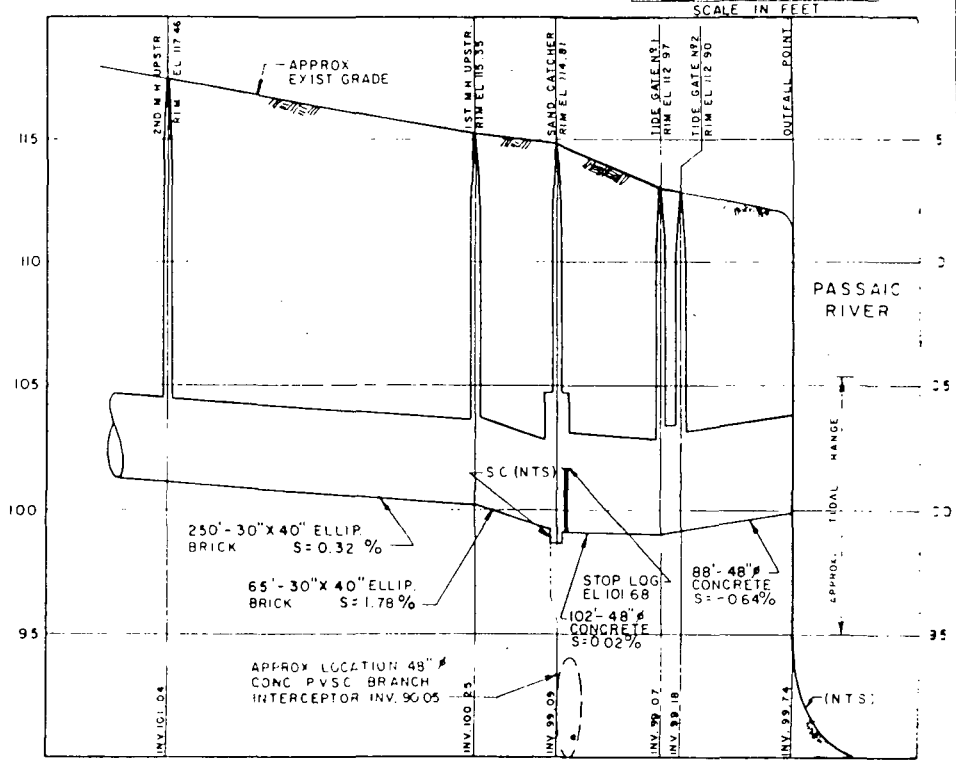
LEGEND

- DIRECTION OF FLOW
- SC : SAND CATCHER
- TG : TIDE GATE
- UP STR : UP STREAM
- DN STR : DOWN STREAM
- N.T.S. : NOT TO SCALE
- ● : OVERFLOW LOCATION

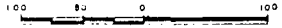


KEY MAP





PROFILE



ALL ELEVATIONS BASED ON B.M. INTERVIOR AS ESTABLISHED BY NEW JERSEY GEODETIC CONTROL SURVEY FOR LOCATION AND DESCRIPTION SEE APPENDIX.

946200191

PASSAIC VALLEY SEWERAGE COMMISSIONERS

OVERFLOW CHAMBER N-014

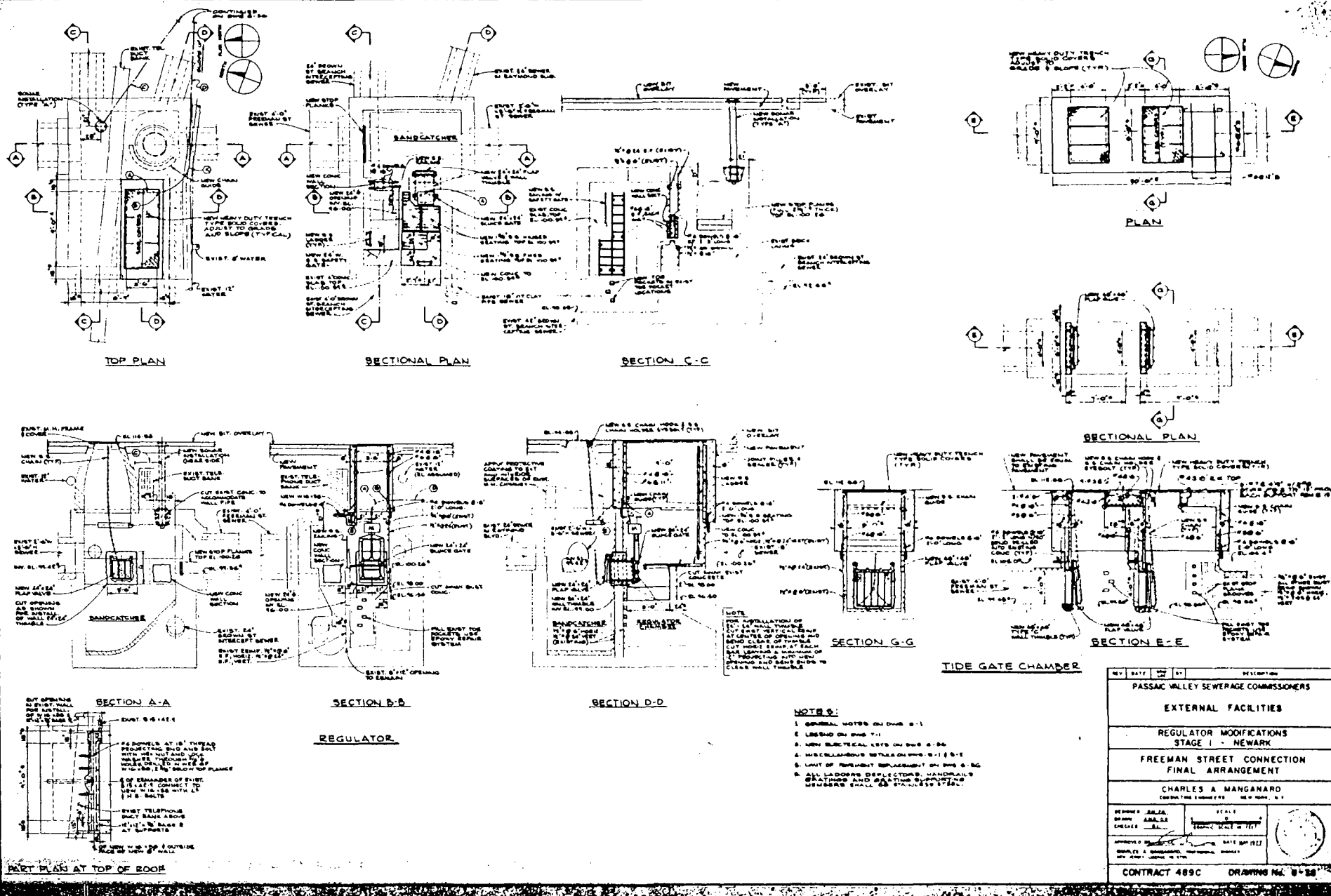
FREEMAN STREET, NEWARK

PLAN AND PROFILE

ELSON T. KILLAM ASSOCIATES, INC.

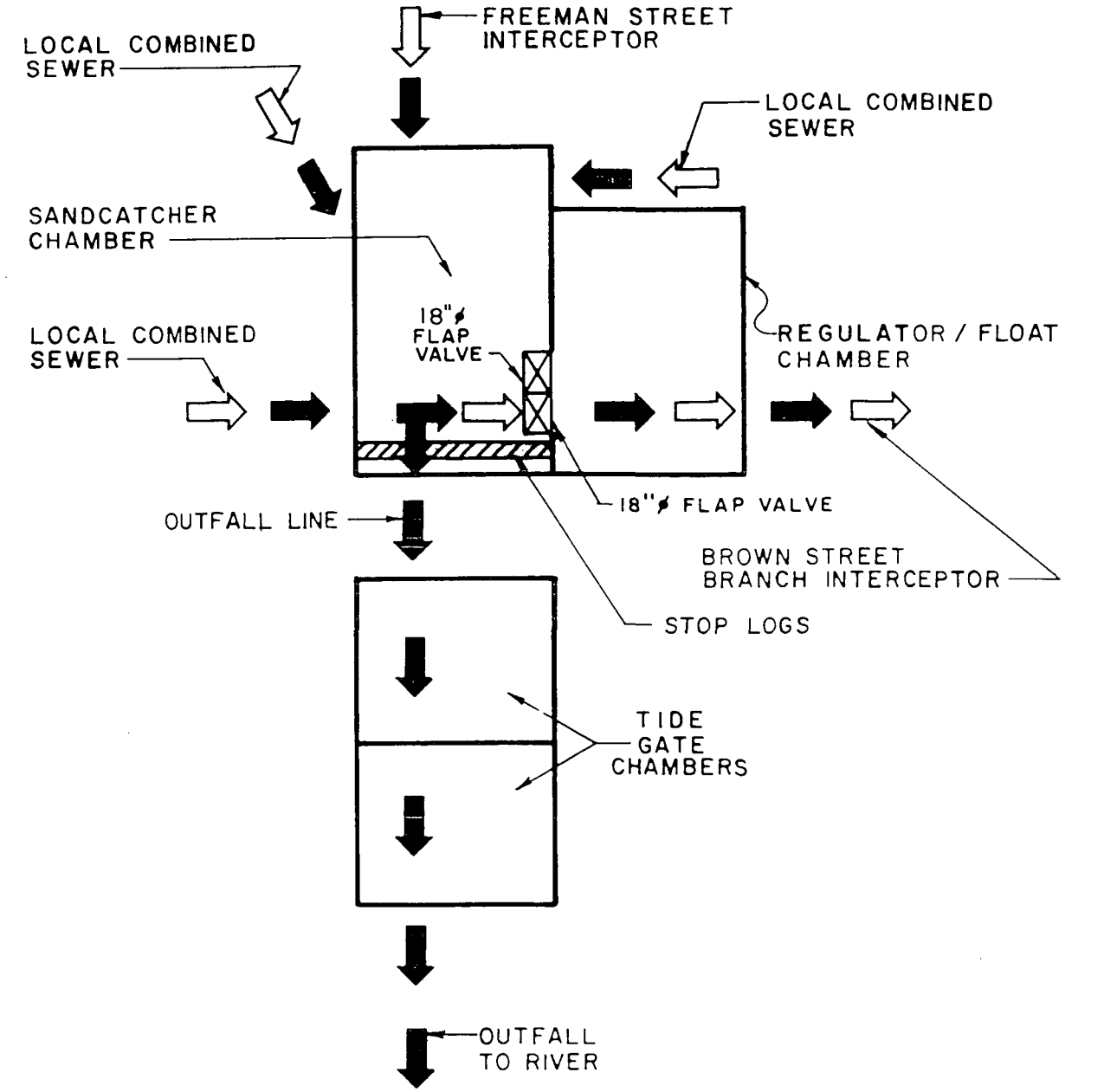
Environmental and Hydraulic Engineers

PLATE A



946200192

PLATE B



LEGEND

DRY WEATHER FLOW

STORM FLOW/OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

FREEMAN STREET, NEWARK

SCHEMATIC

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

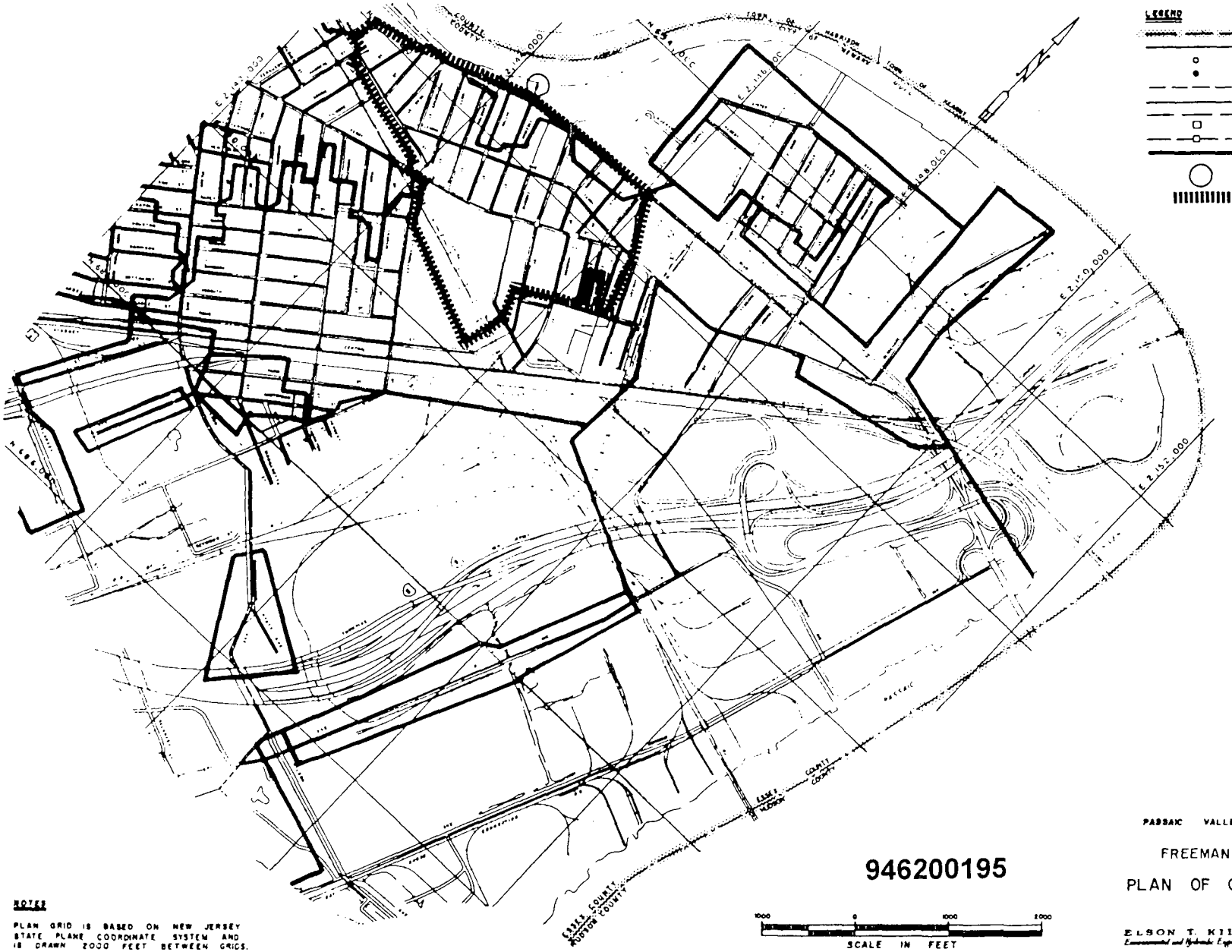
FREEMAN STREET OVERFLOW N-014 (Cont'd)

Condition of Regulator:	appears inoperable
Special Actions Required:	all combined flow is diverted to river by closing flap gate in sand catcher chamber, whenever heavy combined flows are experienced
Overflow Stop Log/Dam Condition:	located at entrance to outfall line; consists of partially bricked up opening
Tide Gate Condition:	both tide gates leaking

Note: During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

Combined Area Served (See Plate D):	0.233 square miles - 149 acres
Average Daily Flow	
Seasonal Dry Weather:	1.00 MGD
Seasonal Wet Weather:	1.20 MGD
Estimated Combined Flow to Produce an Overflow:	17.3 MGD
Approximate Length of Combined Sewers Serving District:	23,900 linear feet



946200195

NOTES

PLAN GRID IS BASED ON NEW JERSEY STATE PLANE COORDINATE SYSTEM AND IS DRAWN 2000 FEET BETWEEN GRIDS.

1000 0 1000 2000
SCALE IN FEET

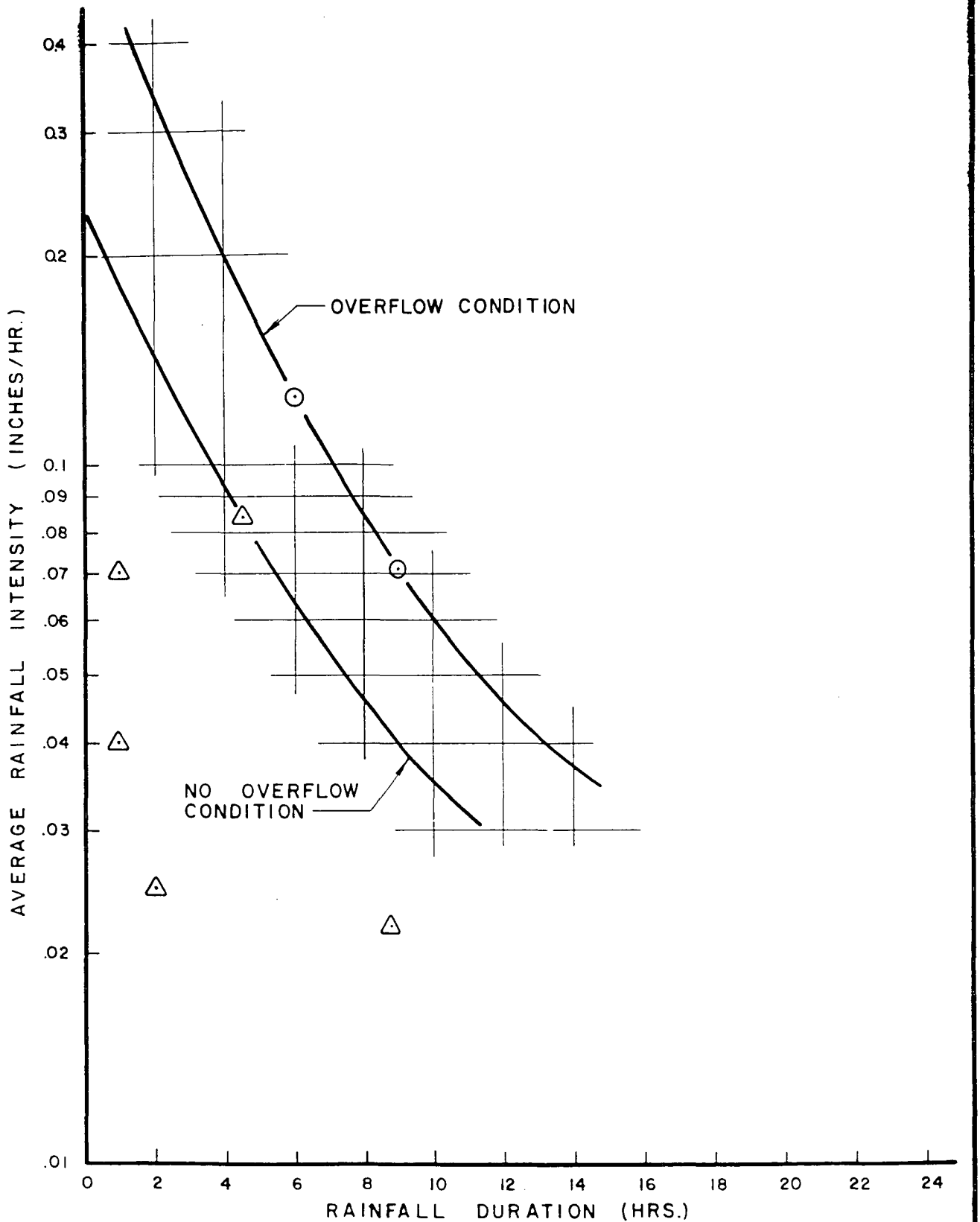
PASSAIC VALLEY SEWERAGE COMMISSIONERS

FREEMAN STREET, NEWARK

PLAN OF COLLECTION SYSTEM

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers

PLATE D



LEGEND

⊙ OVERFLOW

△ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS

FREEMAN STREET, NEWARK

AVERAGE RAINFALL INTENSITY

VS.

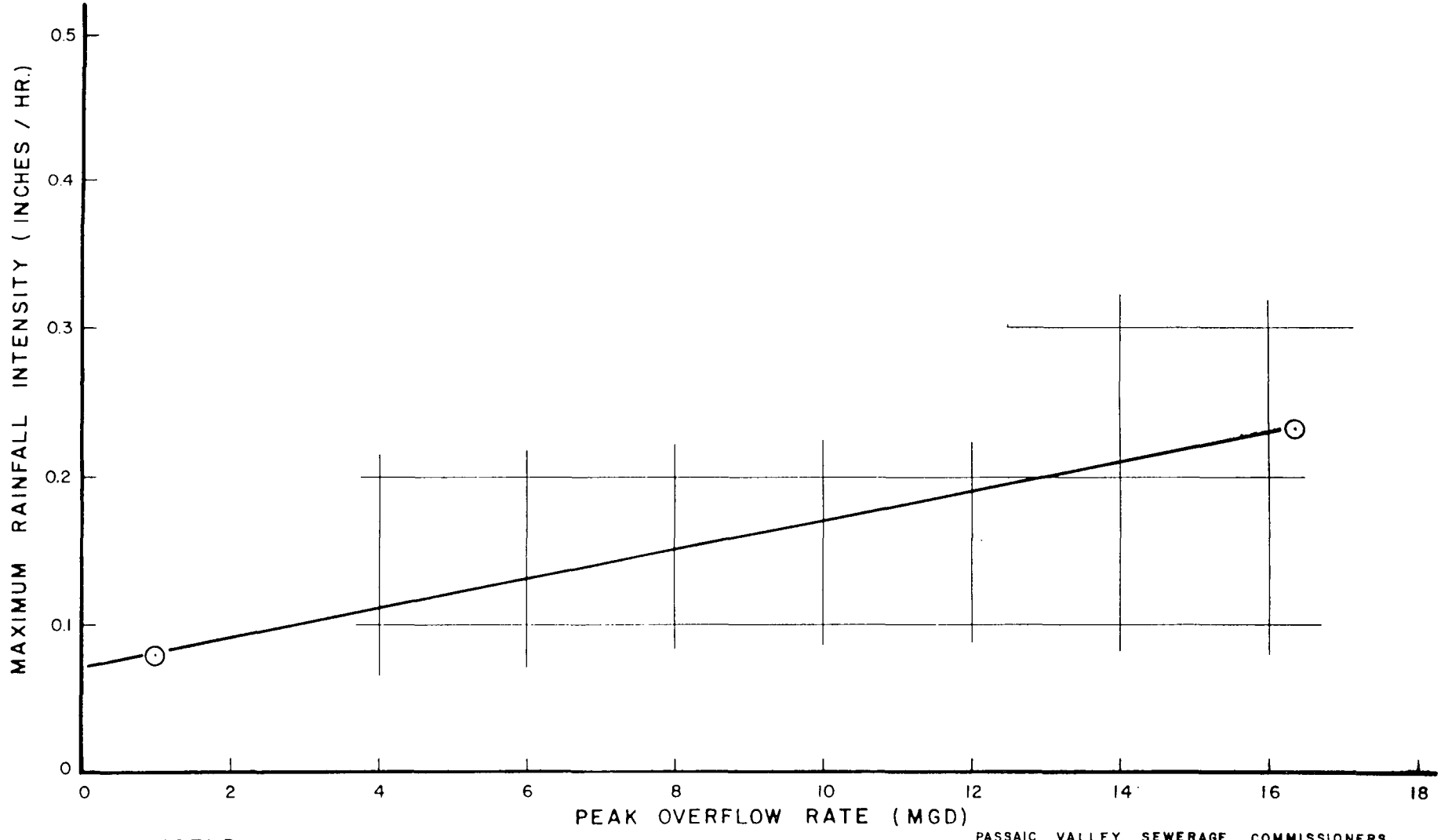
RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.

Environmental and Hydraulic Engineers

PLATE E

946200196



LEGEND

⊙ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS

FREEMAN STREET, NEWARK

MAXIMUM RAINFALL INTENSITY

VS.

PEAK OVERFLOW RATE

946200197

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers · 40 ESSEX STREET, MILLBURN, NEW JERSEY 07041

PLATE F

P.V.S.C Reference # X-3

Date 11/1/74

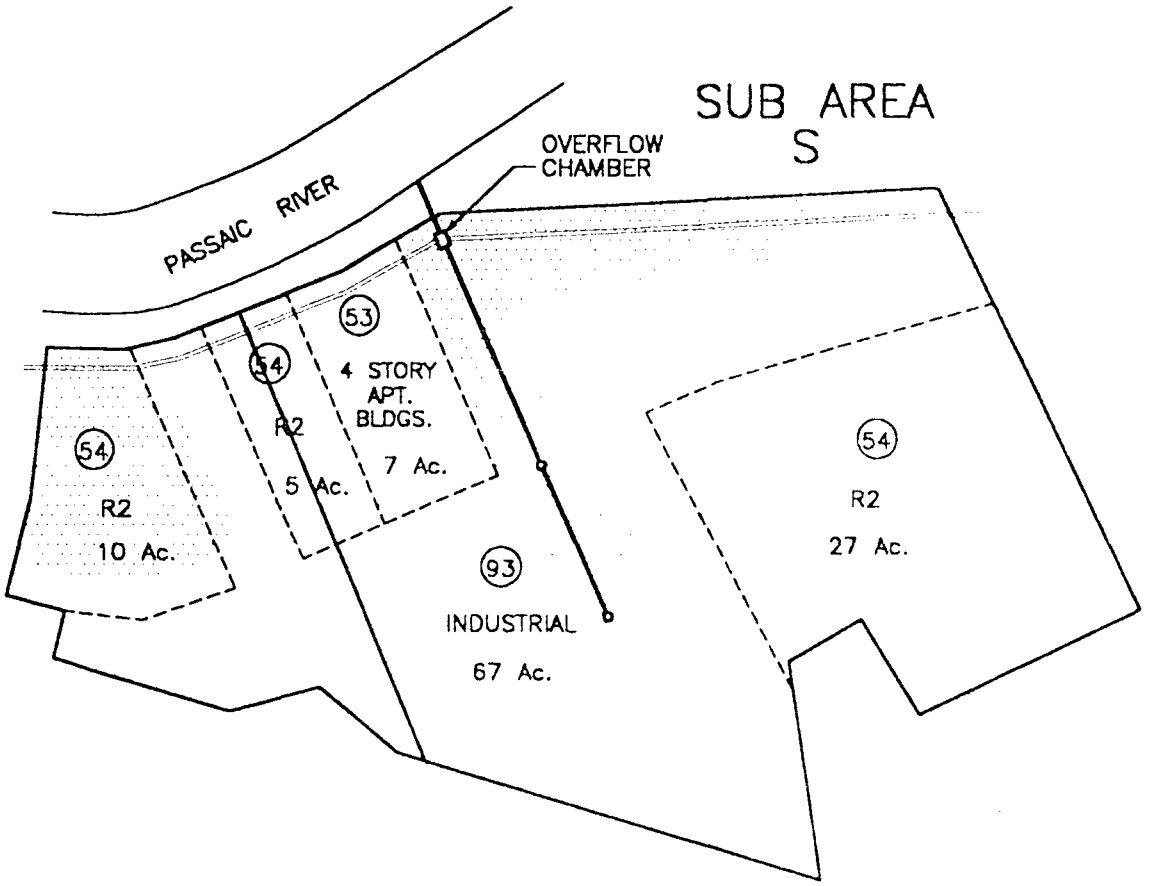
Elson Killam Associates-Infiltration Studies

Freeman Street, Newark-First manhole upstream from Sandcatcher - 10:10 A. M.-10/31/74 to 9:30 A. M.-11/1/74. 24 Samples

Baseline

Sample #	pH	T.S.S	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C/ C.O.D.	B.O.D.	B.O.D./ C.O.D
1	7.2	108	96	88.9	400	120	30.0	230	57.5
2	7.3	62	46	74.1	268	90	33.6	138	51.5
3	7.3	64	48	75.0	264	93	35.2	124	46.9
4	7.3	52	48	92.3	272	99	36.4	155	56.8
5	7.2	72	58	80.6	276	84	30.4	133	48.2
6	7.3	80	64	80.0	704	243	34.5	539	76.6
7	7.4	94	80	85.1	344	117	34.0	168	48.9
8	7.3	114	108	94.7	368	120	32.6	--	--
9	7.2	188	170	90.4	504	148	29.4	468	93.0
10	6.8	322	310	96.3	688	180	26.2	432	62.8
11	6.7	388	370	95.4	680	220	32.4	425	62.6
12	6.7	204	188	92.3	840	240	28.6	469	55.9
13	6.7	282	258	91.5	336	129	38.4	229	68.2
14	6.8	64	54	84.4	340	84	24.7	165	48.6
15	7.0	142	120	84.5	304	99	32.6	120	39.6
16	7.2	46	46	100.0	172	51	70.8	113	65.6
17	7.3	4	4	100.0	64	36	56.3	43	68.2
18	7.4	6	6	100.0	68	27	39.7	29	42.7
19	7.4	10	10	100.0	48	21	43.8	17	35.5
20	7.3	6	6	100.0	52	24	46.2	43	82.8
21	7.4	6	6	100.0	124	54	43.5	90	72.5
22	7.5	100	90	90.0	328	105	32.0	225	68.5
23	10.0	92	82	89.1	592	160	27.0	388	65.5
24	9.3	136	108	79.4	532	148	35.9	320	60.1
							36.4		59.9

LAND USE	%	ACRES
R3	6	7
R2	36	42
R1	---	---
OPEN SPACE	---	---
INDUSTRIAL	58	67
COMMERCIAL	---	---
TOTAL	100	116



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- □ REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
FREEMAN STREET OVERFLOW
CITY OF NEWARK

Killam

FIGURE N-014

946200199

Passaic Valley Sewerage Commissioners

Drainage Area and Land Use Report

Drainage Area and Control Information

on

Peddie District, Newark
PVSC NJPDES No. 60

1996

OVERFLOW DATA EXTRACT
PEDDIE DISTRICT OVERFLOW CHAMBER
PVSC DISCHARGE NO. 060
NEWARK

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Peripheral Ditch, a tributary of Newark Bay
Character of District Served:	19% industrial, 17% commercial, 59% residential, and 5% open space
Overflow Location (See Plate A):	Approximately 235' southwest of the end of Peddie Street, across Penn Central Railroad Tracks
District Outlet Sewer (See Plate A):	84" x 162" RCP Box Culvert 84" x 132" RCP Box Culvert
Outfall to River (See Plate A)	No outfall pipe, flow discharges through 4 - 6' x 8' wooden tide gates.
Outfall Condition:	Clear of debris and functioning
Tidal Effects:	Some, tide gates present
Surcharge Effects	Occurs as a result of backwater conditions in the Peripheral Ditch during extreme wet weather conditions.

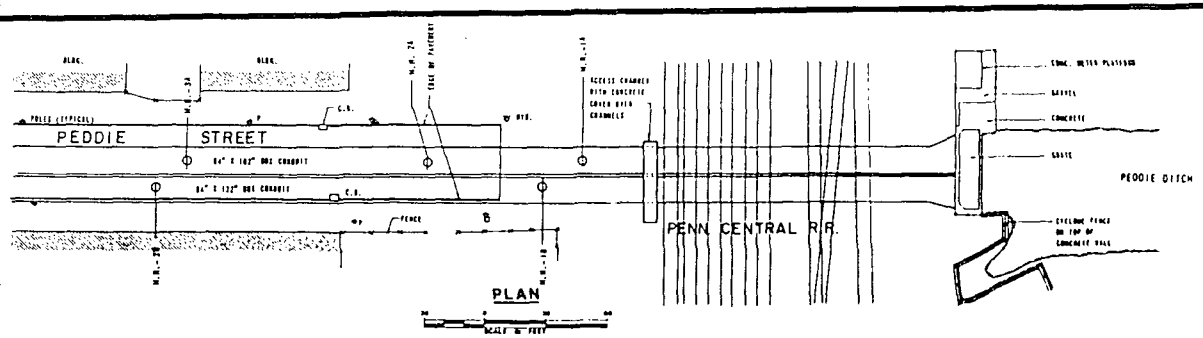
OVERFLOW DATA EXTRACT
PEDDIE DISTRICT OVERFLOW CHAMBER
PVSC DISCHARGE NO. 060
NEWARK

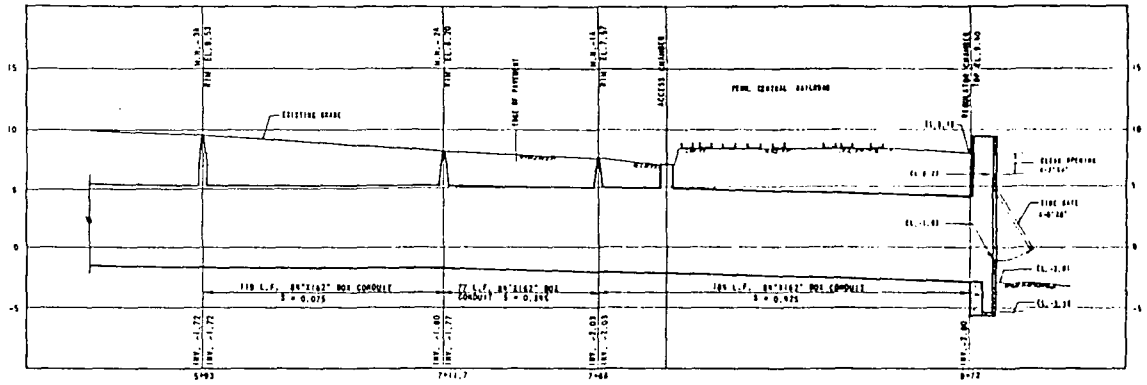
Chamber Location and Description (continued)

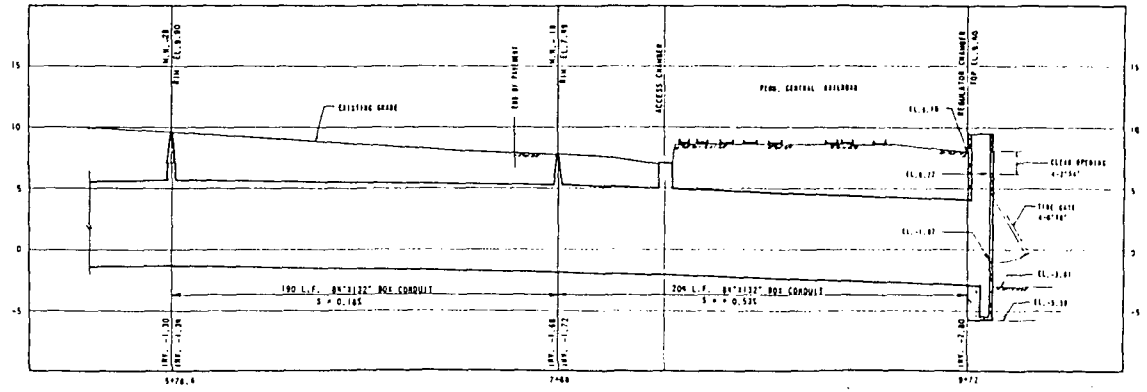
Overflow and Regulator Operation (See Plate B):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, the regulator gate may be closed by remote transmitter at the Passaic Valley Water Pollution Control Facility forcing all of the flow to discharge to the Peripheral Ditch.
Condition of Regulator:	Operable
Special Actions Required:	None
Overflow Stop Log/Dam Condition:	Stop logs located in diversion chamber before portal to outfall.
Tide Gate Condition:	4 - 6' x 8' Tide Gates

Area Served and Dry Weather Flow

Combine Area Served (See Plate C):	2.727 sq. Miles - 1,745 ac
Average Daily Flow	
Seasonal Dry Weather:	N/A
Seasonal Wet Weather	N/A
Estimated Combined Flow to Produce an Overflow:	N/A
Approximate Length of Combined Sewers Serving	







PROFILE

PASSAIC VALLEY SEWERAGE COMMISSIONERS

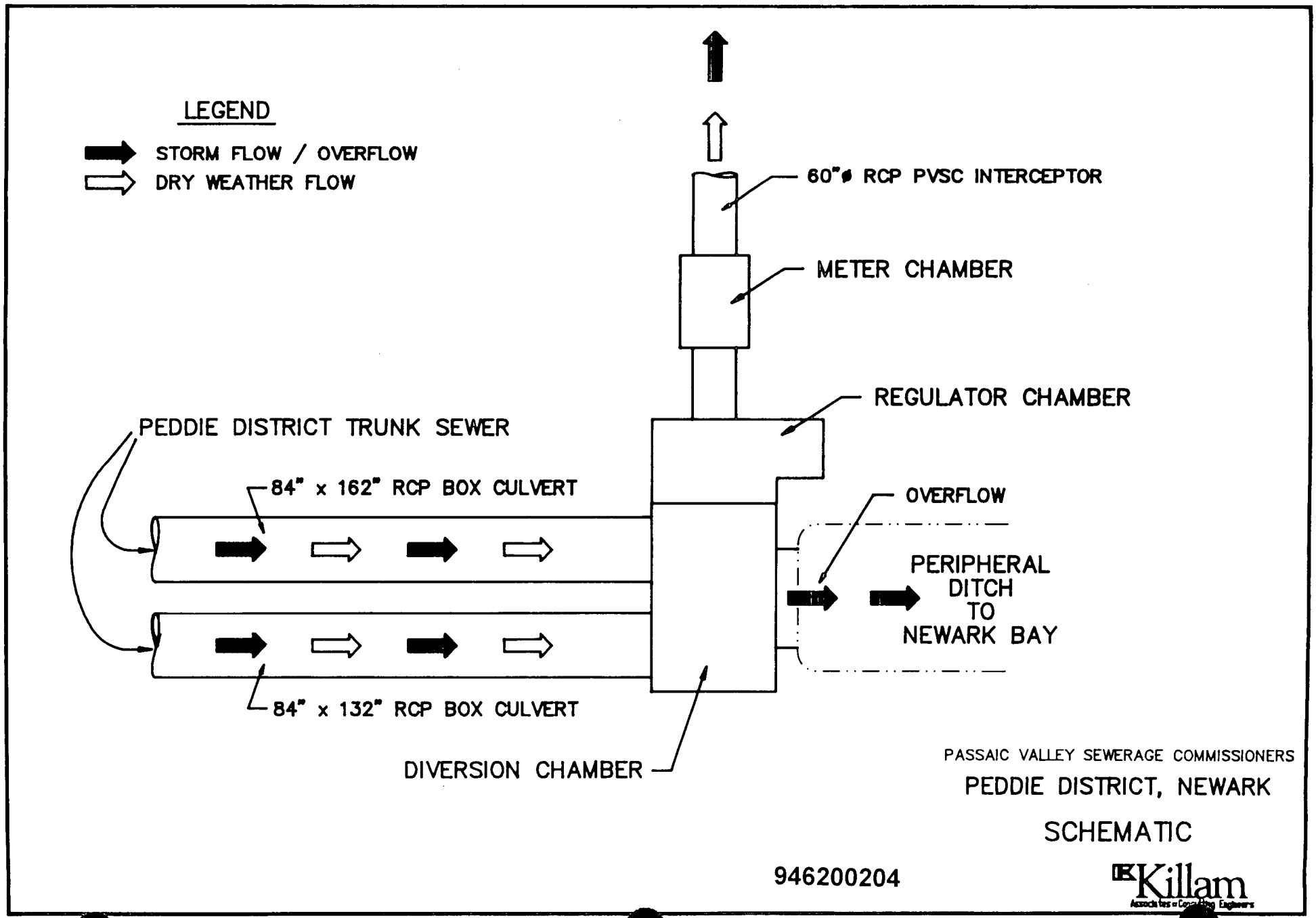
PEDDIE DISTRICT, NEWARK

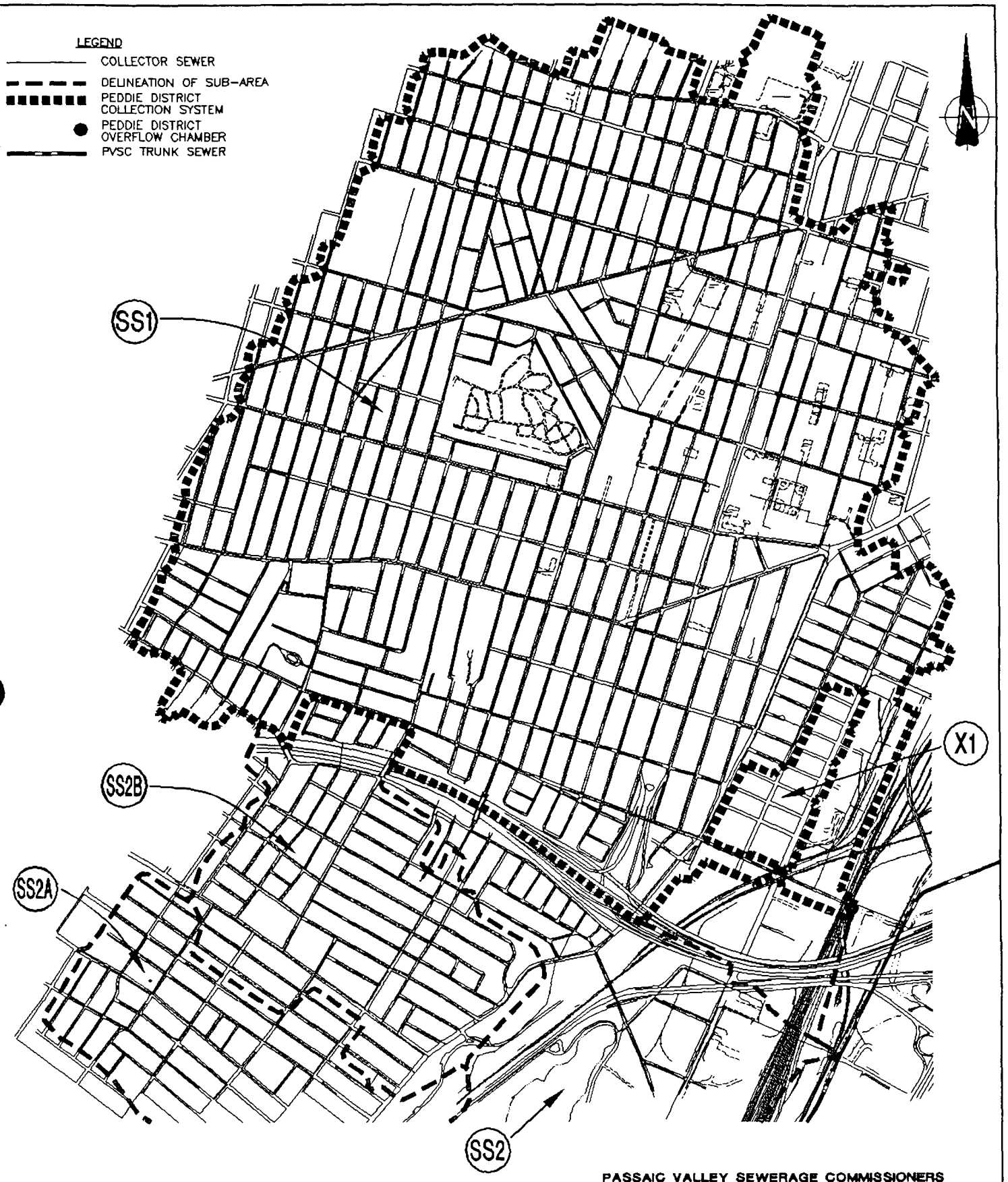
PLAN AND PROFILE

Killam Associates • Consulting Engineers

PLATE A

946200203


LEGEND
STORM FLOW / OVERFLOW
DRY WEATHER FLOW
60"ø RCP PVSC INTERCEPTOR
METER CHAMBER
REGULATOR CHAMBER
PEDDIE DISTRICT TRUNK SEWER
84" x 162" RCP BOX CULVERT
OVERFLOW
PERIPHERAL DITCH TO NEWARK BAY
84" x 132" RCP BOX CULVERT
DIVERSION CHAMBER
PASSAIC VALLEY SEWERAGE COMMISSIONERS
PEDDIE DISTRICT, NEWARK
SCHEMATIC
946200204
Killam



PASSAIC VALLEY SEWERAGE COMMISSIONERS

PEDDIE DISTRICT, NEWARK

PLAN OF COLLECTION SYSTEM

Killam Associates Consulting Engineers

PLATE C

2/23/96

946200205

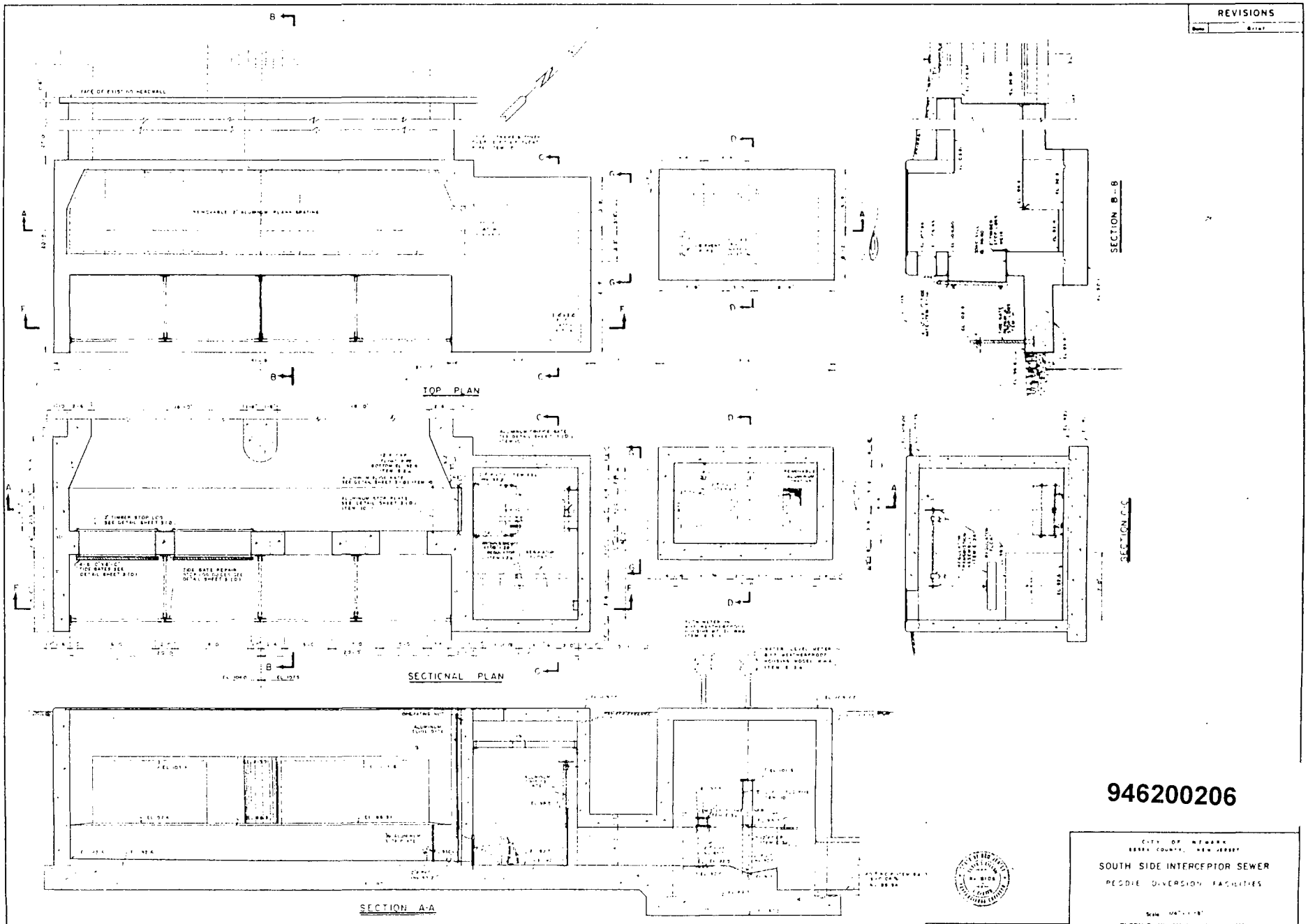
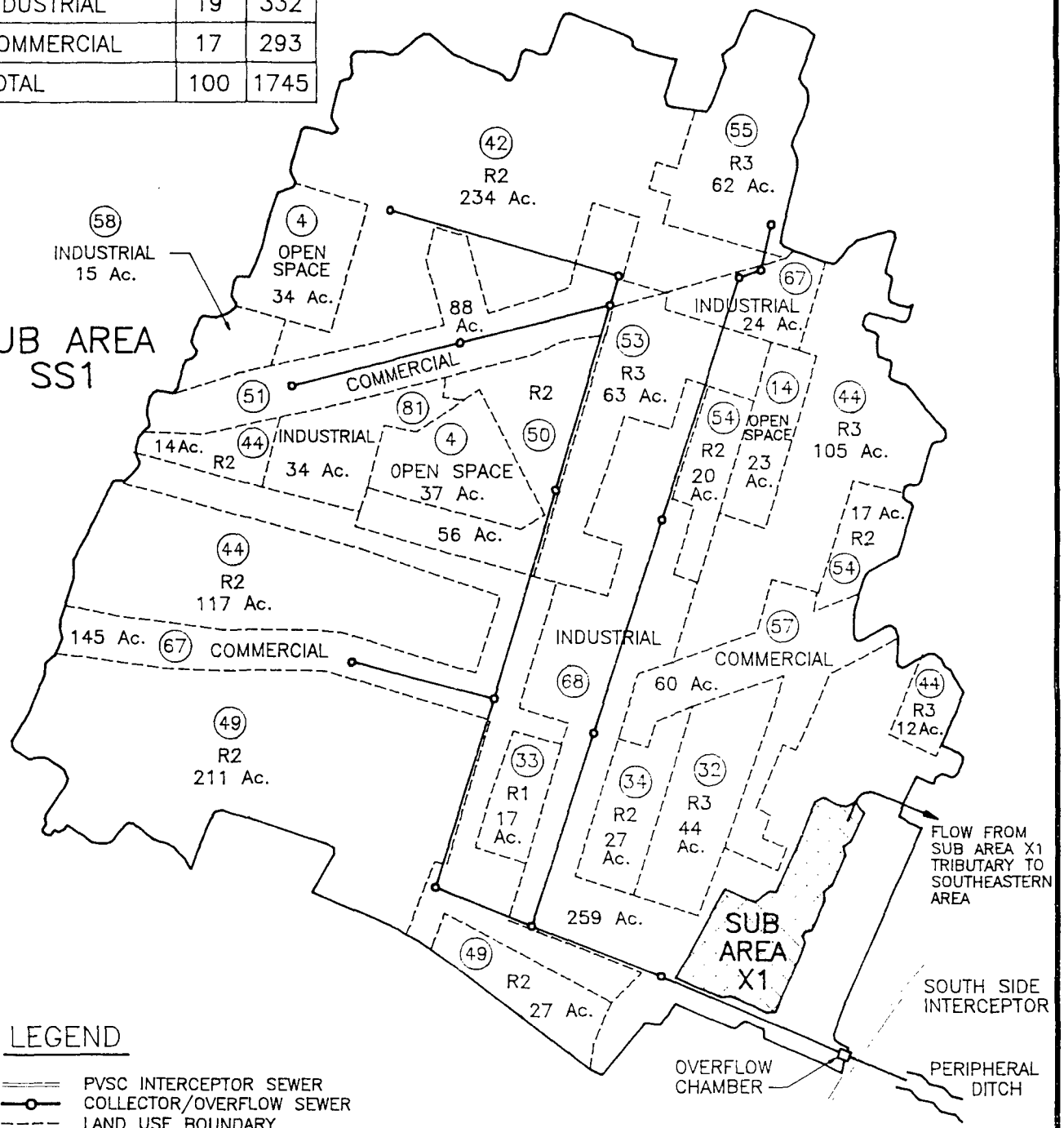

REVISIONS
TOP PLAN
SECTION B-B
SECTIONAL PLAN
SECTION C-C
SECTION A-A
946200206
CITY OF NEWARK
ESSEX COUNTY, NEW JERSEY
SOUTH SIDE INTERCEPTOR SEWER
PEQUIE DIVERSION FACILITIES
ELSON T. KILLAM ASSOCIATES INC.
HYDRAULIC AND SANITARY ENGINEERS
Designed By
Drawn By
Checked By
Traced By
Approved By
Drawing Date JULY 5, 1944

PLATE D

LAND USE	%	ACRES
R3	17	286
R2	41	723
R1	1	17
OPEN SPACE	5	94
INDUSTRIAL	19	332
COMMERCIAL	17	293
TOTAL	100	1745



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- □ REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SUB AREA X1
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
PEDDIE DISTRICT OVERFLOW
CITY OF NEWARK, SOUTH SIDE

Killam Associates ▫ Consulting Engineers

FIGURE SS-001

946200207

Passaic Valley Sewerage Commissioners

Drainage Area and Land Use Report

Drainage Area and Control Information

on

Queen Street, Newark
PVSC NJPDES No. 61

1996

OVERFLOW DATA EXTRACT
QUEEN STREET OVERFLOW CHAMBER
PVSC DISCHARGE NO. 061
NEWARK

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Peripheral Ditch, a tributary of Newark Bay
Character of District Served:	11% industrial, 5% commercial, 46% residential, and 38% open space
Overflow Location (See Plate A):	To northeast of eastern end of International Way
District Outlet Sewer (See Plate A):	60" x 102" RCP Box Culvert
Outfall to River (See Plate A):	No outfall pipe, flow discharges through 3 - 54" x 75" tide gates
Outfall Condition:	Clear of debris and functioning
Tidal Effects:	Some, tide gates present
Surcharge Effects:	Occurs as a result of backwater conditions in Peripheral Ditch during extreme weather conditions.

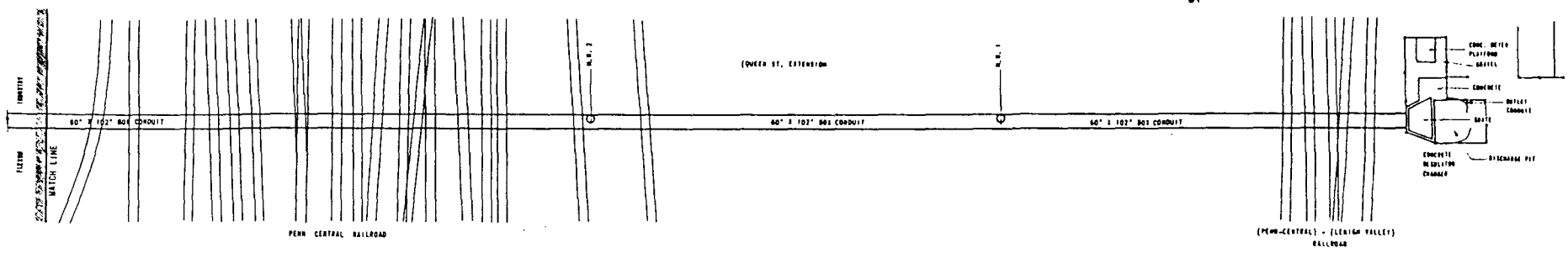
OVERFLOW DATA EXTRACT
QUEEN STREET OVERFLOW CHAMBER
PVSC DISCHARGE NO. 061
NEWARK

Chamber Location and Description (continued)

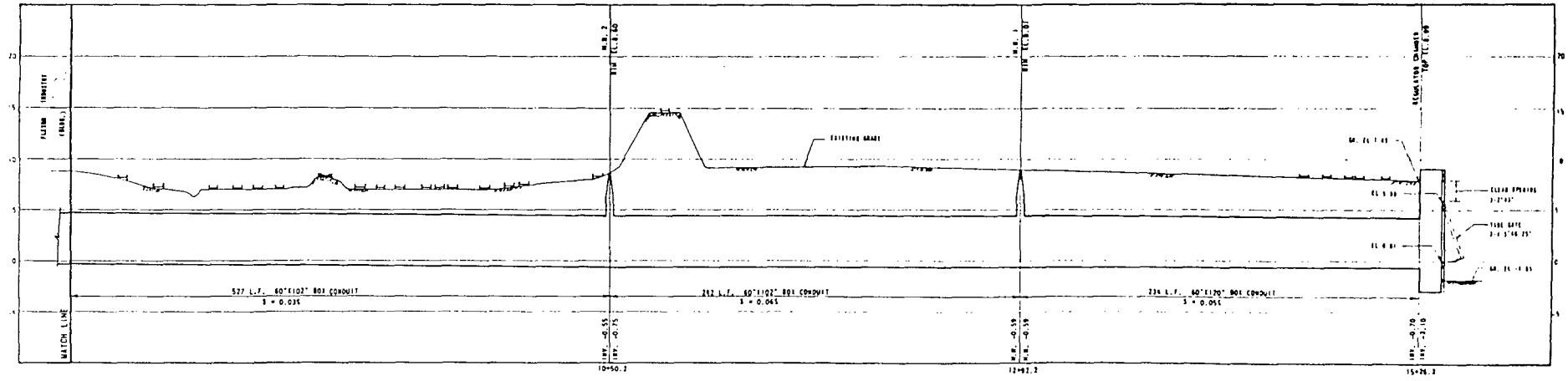
Overflow and Regulator Operation (See Plate B)	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, the regulator gate may be closed by remote transmitter at the Passaic Valley Water Pollution Control Facility forcing all of the flow to discharge to the Peripheral Ditch.
Condition of Regulator:	Operable
Special Actions Required:	None
Overflow Stop Log/Dam Condition:	Some logs located in diversion chamber before portal to outfall.
Tide Gate Condition:	Operable, 3 - 54" x 75" tide gates

Area Served and Dry Weather Flow

Combined Area Served (See Plate C)	0.845 square miles - 541 acres
Average Daily Flow	
Seasonal Dry Weather:	N/A
Seasonal Wet Weather:	N/A
Estimated Combined Flow to Produce an Overflow:	N/A
Approximate Length of Combined Sewers Serving District:	31,831 linear feet



PLAN



PROFILE

PASSAIC VALLEY SEWERAGE COMMISSIONERS

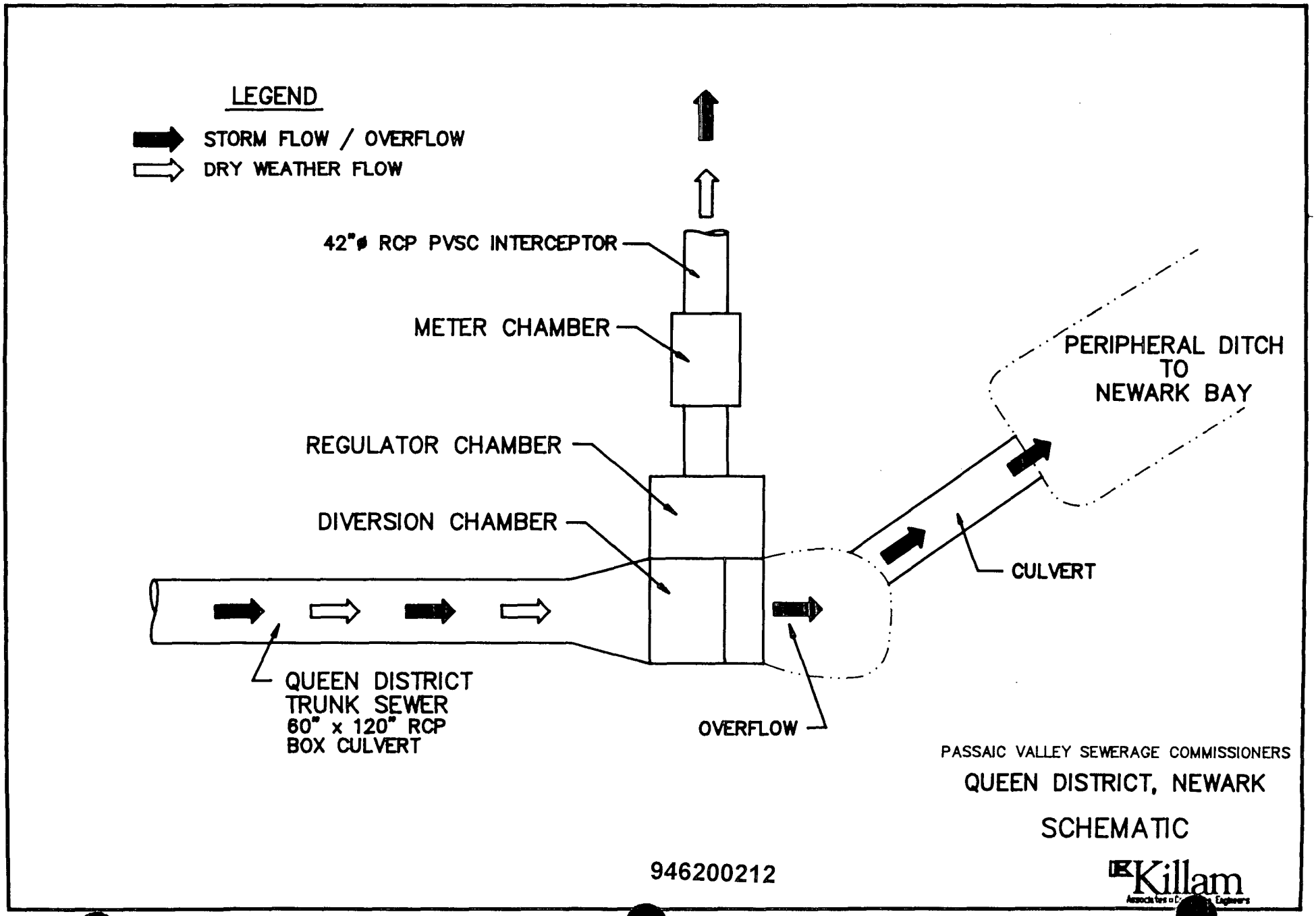
QUEEN DISTRICT, NEWARK

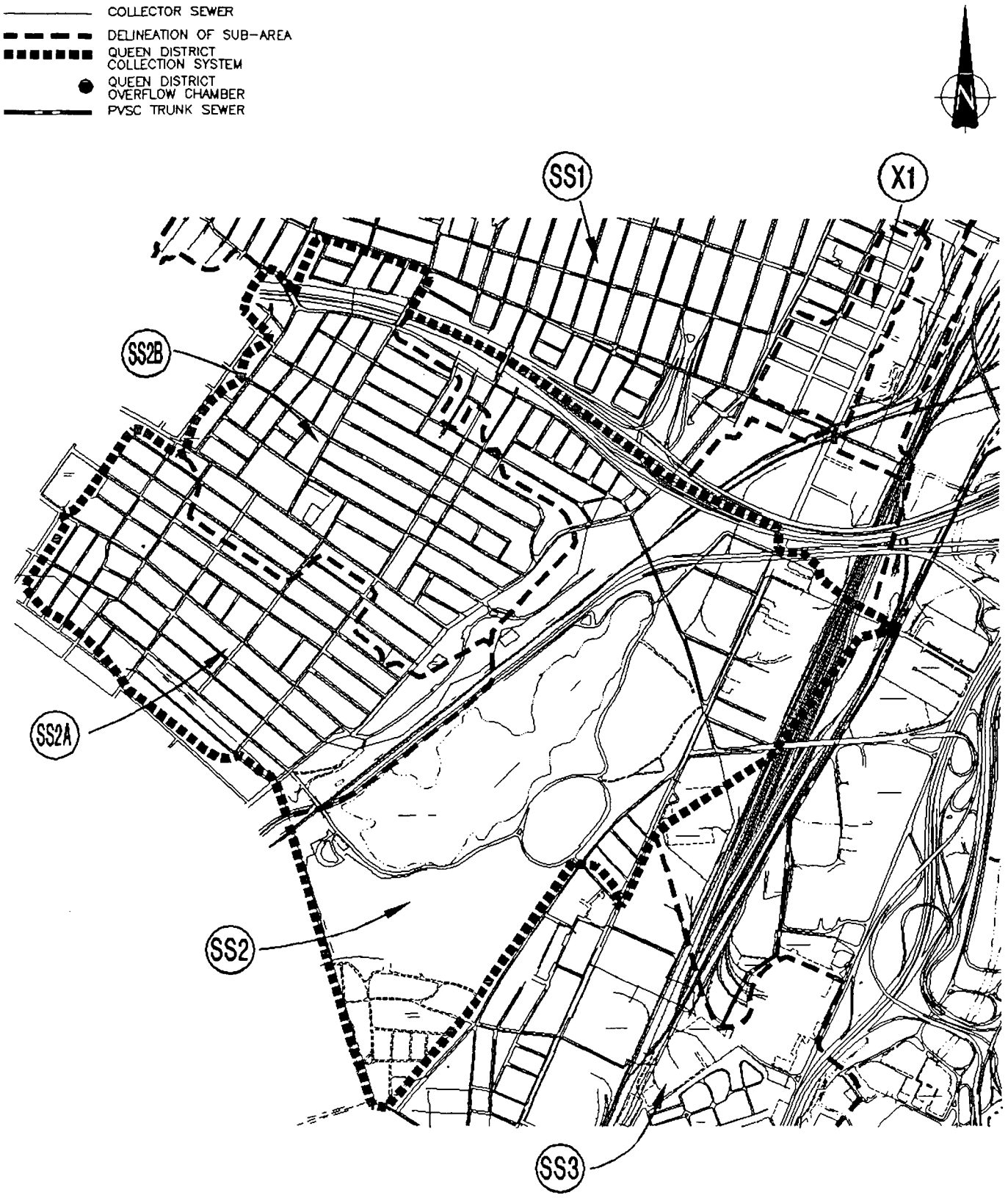
PLAN AND PROFILE

Killam
Associates Consulting Engineers

946200211

PLATE A


LEGEND
STORM FLOW / OVERFLOW
DRY WEATHER FLOW
42"ø RCP PVSC INTERCEPTOR
METER CHAMBER
REGULATOR CHAMBER
DIVERSION CHAMBER
PERIPHERAL DITCH
TO
NEWARK BAY
CULVERT
QUEEN DISTRICT
TRUNK SEWER
60" x 120" RCP
BOX CULVERT
OVERFLOW
PASSAIC VALLEY SEWERAGE COMMISSIONERS
QUEEN DISTRICT, NEWARK
SCHEMATIC
946200212
EKillam



PASSAIC VALLEY SEWERAGE COMMISSIONERS

QUEEN DISTRICT, NEWARK

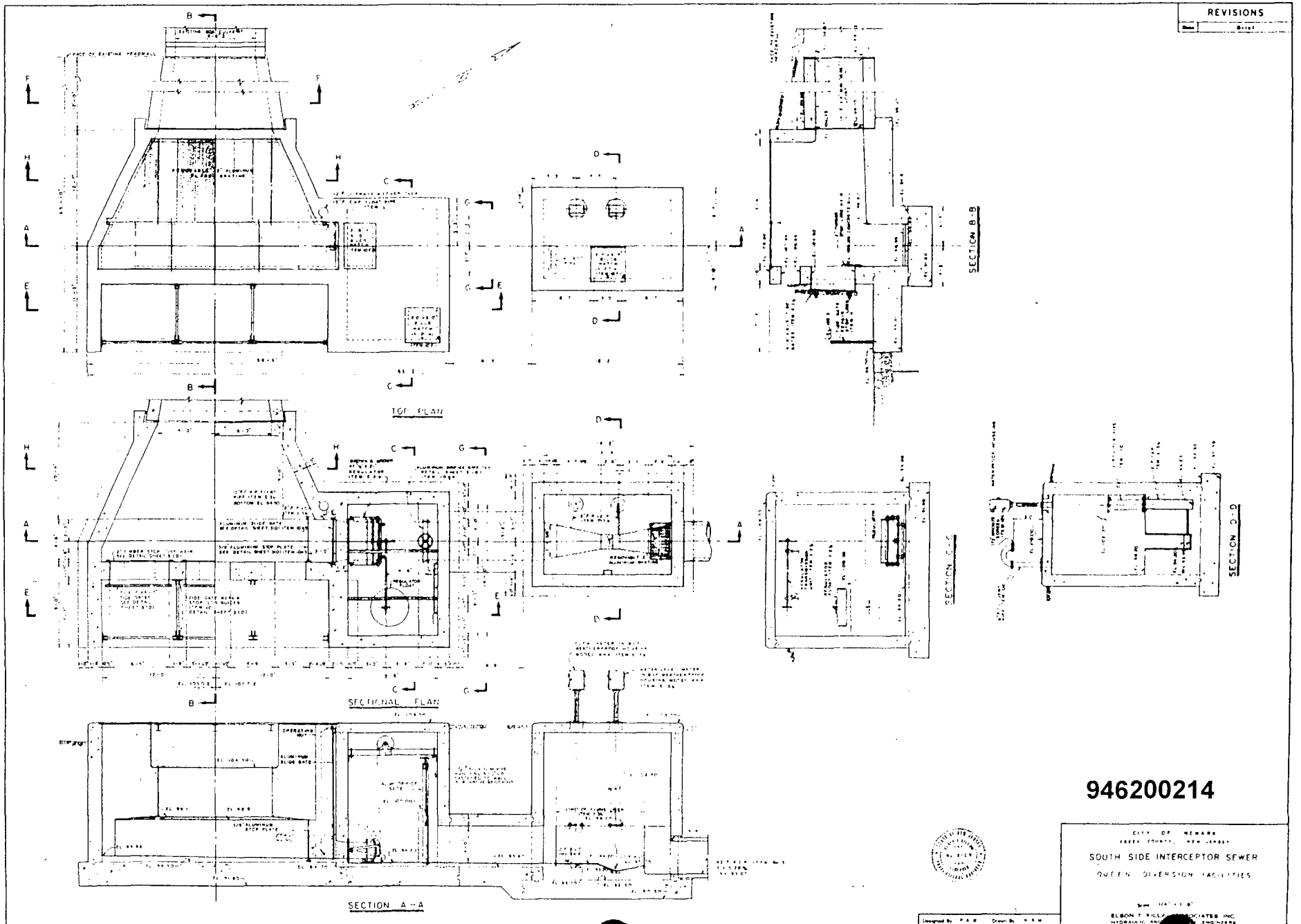
PLAN OF COLLECTION SYSTEM

Killam Associated Consulting Engineers

PLATE C

2/23/96

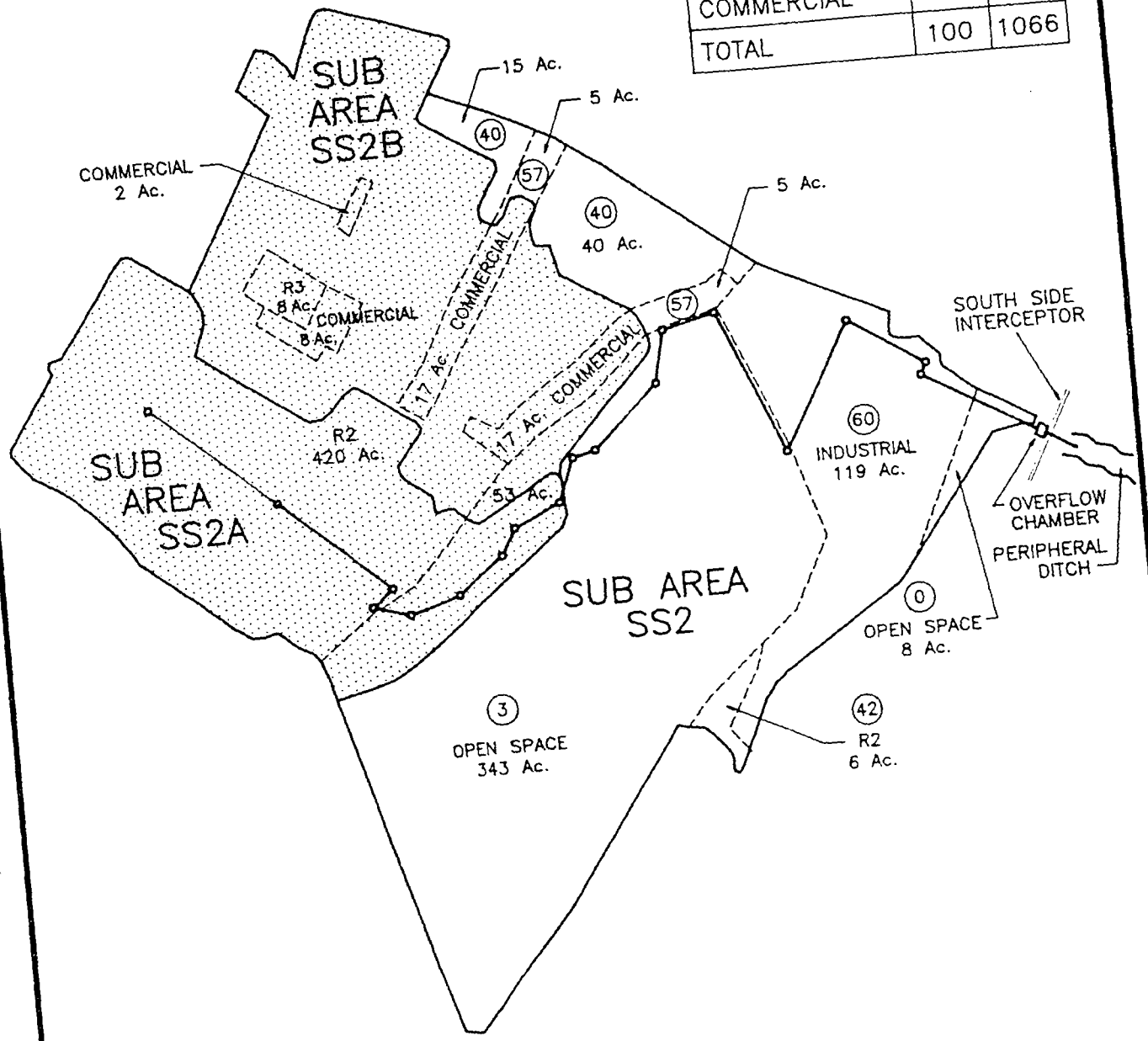
946200213


REVISIONS
TOP PLAN
SECTIONAL PLAN
SECTION A-A
SECTION B-B
SECTION C-C
SECTION D-D
946200214
CITY OF NEWARK
ESSEX COUNTY, NEW JERSEY
SOUTH SIDE INTERCEPTOR SEWER
QUEEN DIVERSION FACILITIES
ELSON T. KILLAM ASSOCIATES, INC.
HYDRAULIC AND SANITARY ENGINEERS

PLATED

NOTE: 1. SUBAREAS SS2A AND SS2B ARE SERVICED BY SEPARATE SANITARY SEWER SYSTEMS
2. TOTAL COMBINED SEWER AREA = 541 ACRES

LAND USE	%	ACRES
R3	1	8
R2	45	481
R1	---	---
OPEN SPACE	38	404
INDUSTRIAL	11	119
COMMERCIAL	5	54
TOTAL	100	1066



LEGEND

- PVSC INTERCEPTOR SEWER
- COLLECTOR/OVERFLOW SEWER
- LAND USE BOUNDARY
- DRAINAGE BASIN BOUNDARY
- (15) PERCENT IMPERVIOUS
- □ REGULATOR CHAMBER
- R3 RESIDENTIAL (HIGH DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R1 RESIDENTIAL (LOW DENSITY)
- SEPARATE STORM SEWER AREA

PASSAIC VALLEY SEWERAGE COMMISIONERS
NEW JERSEY
COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN
DRAINAGE AND LAND USE REPORT
QUEEN DISTRICT OVERFLOW
CITY OF NEWARK, SOUTH SIDE

Killam Associates a Consulting Engineers

FIGURE SS-00

946200215

Passaic Valley Sewerage Commissioners

Drainage Area and Land Use Report

Drainage Area and Control Information

on

Waverly District, Newark
PVSC NJPDES No. 6

1996

OVERFLOW DATA EXTRACT
WAVERLY DISTRICT OVERFLOW CHAMBER
PVSC DISCHARGE NO. 062
NEWARK

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Peripheral Ditch, a tributary of Newark Bay
Character of District Served:	(59% industrial, 2% commercial, 18% residential, and 21% open space)
Overflow Location (See Plate A):	East side of Routes 1 and 9 approximately 1,500' southeast of the Waverly Overflow Chamber
District Outlet Sewer (See Plate A):	96" RCP Sewer 36" RCP Sewer
Outfall to River (See Plate A):	96" RCP Sewer 36" RCP Sewer
Outfall Condition:	Clear of debris and functioning
Tidal Effects:	Some, tide gates present
Surcharge Effects:	Occurs as a result of backwater conditions in the Peripheral Ditch during extreme wet weather conditions.

OVERFLOW DATA EXTRACT
WAVERLY DISTRICT OVERFLOW CHAMBER
PVSC DISCHARGE NO. 062
NEWARK

Chamber Location and Description (continued)

Overflow and Regulator Operation (See Plate B):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, the regulator gate may be closed by remote transmitter at Passaic Valley Water Pollution Control Facility forcing all the flow to discharge to the Peripheral Ditch.
Condition of Regulator:Operable	
Special Actions Required:	None
Overflow Stop Log/Dam Condition:	Stop logs located in diversion chamber before portal to outfall line
Tide Gate Condition:	90" and 48' diameter cast iron tide gates.

Area Served and Dry Weather Flow

Combined Area Served (See Plate C):	0.494 square miles - 316 acres
Average Daily Flow	
Seasonal Dry Weather:	N/A
Seasonal Wet Weather:	N/A
Estimated Combined Flow to Produce an Overflow:	N/A
Approximate Length of Combined Sewers Serving District	27,113 linear feet

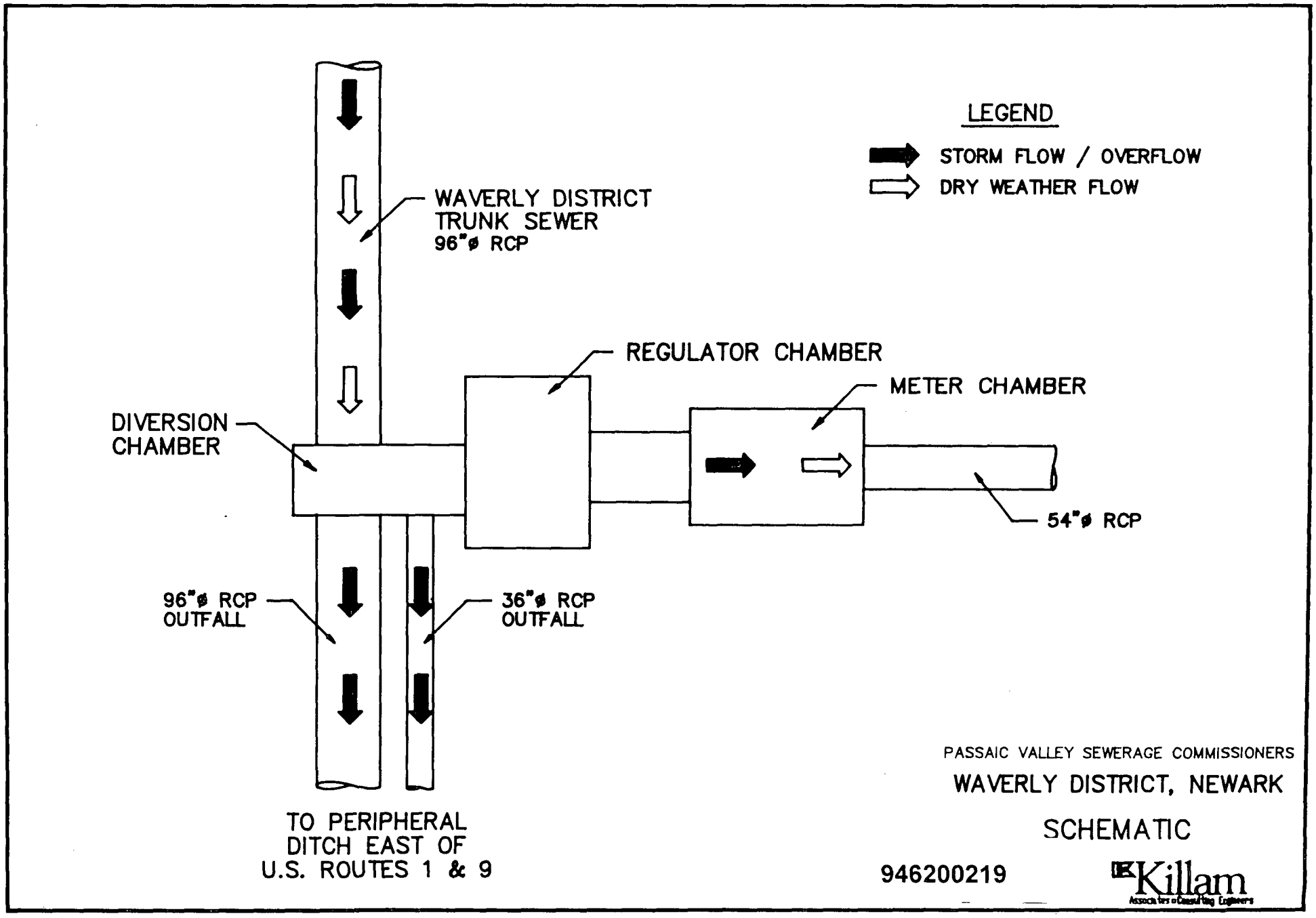

LEGEND
STORM FLOW / OVERFLOW
DRY WEATHER FLOW
WAVERLY DISTRICT
TRUNK SEWER
96"ø RCP
REGULATOR CHAMBER
METER CHAMBER
DIVERSION
CHAMBER
54"ø RCP
96"ø RCP
OUTFALL
36"ø RCP
OUTFALL
TO PERIPHERAL
DITCH EAST OF
U.S. ROUTES 1 & 9
PASSAIC VALLEY SEWERAGE COMMISSIONERS
WAVERLY DISTRICT, NEWARK
SCHEMATIC
946200219
Killam

PLATE B

LEGEND

- COLLECTOR SEWER
- DELINEATION OF SUB-AREA
- WAVERLY DISTRICT COLLECTION SYSTEM
- WAVERLY DISTRICT OVERFLOW CHAMBER
- PVSC TRUNK SEWER

PASSAIC VALLEY SEWERAGE COMMISSIONERS

WAVERLY DISTRICT, NEWARK

PLAN OF COLLECTION SYSTEM

1500 0 1500 3000

SCALE IN FEET

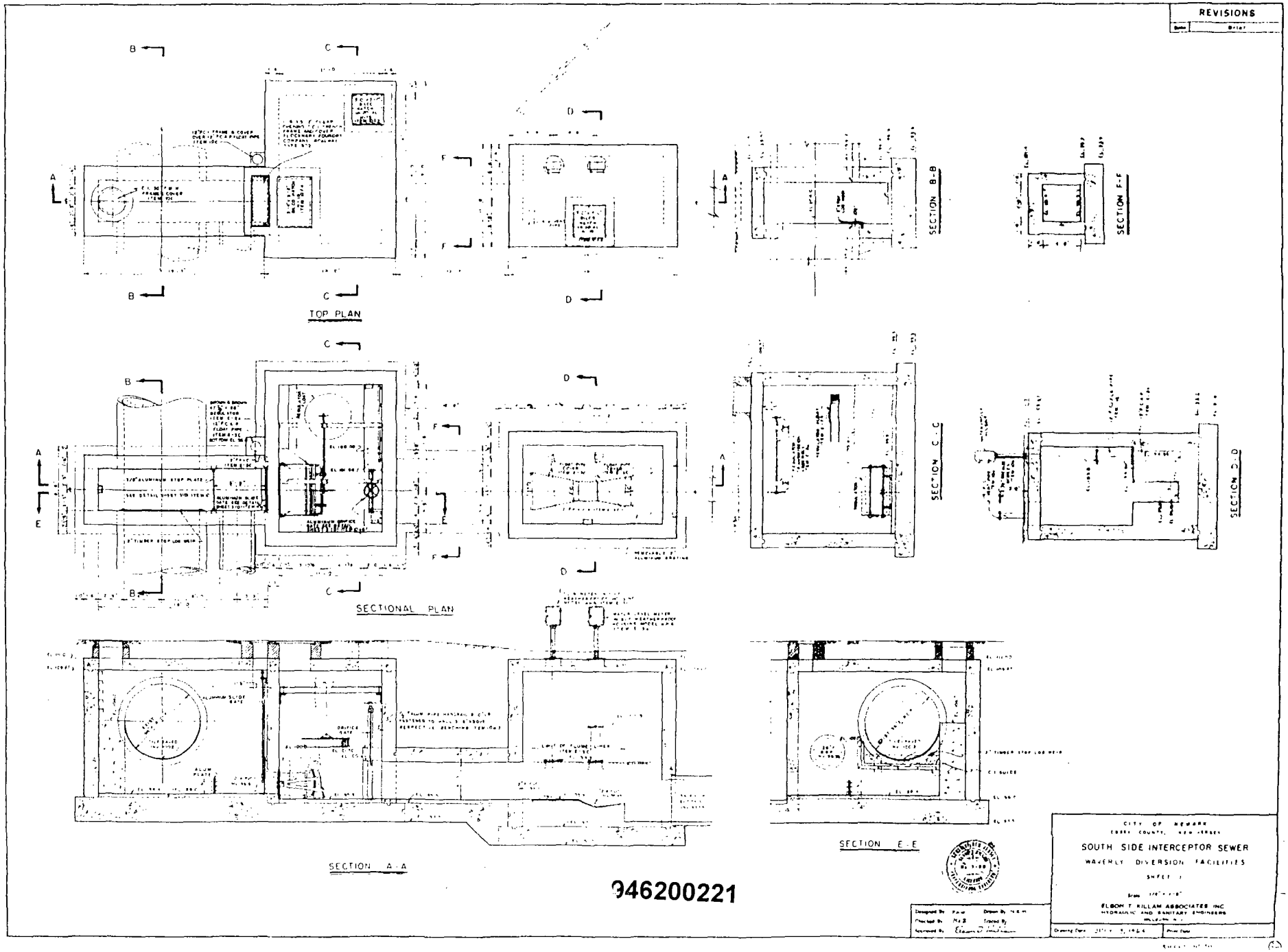
Killam Associated Consulting Engineers

PLATE C

2/23/96

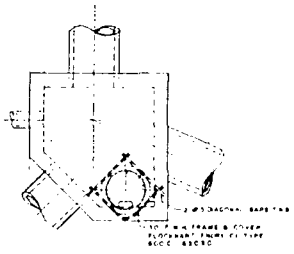
946200220

PLATE D-1

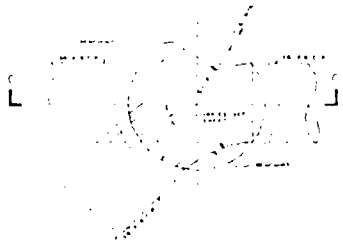


946200221

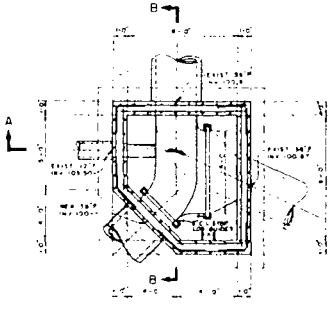
REVISIONS



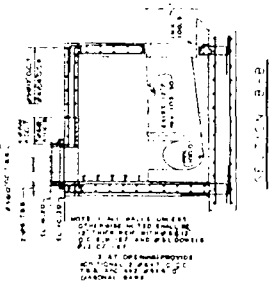
TOP PLAN

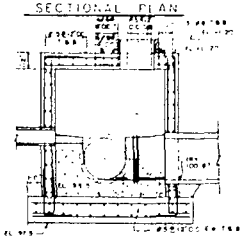


BASE SECTIONAL PLAN



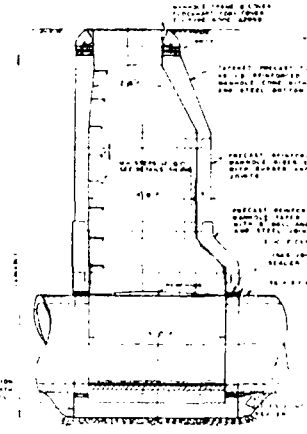
SECTIONAL PLAN





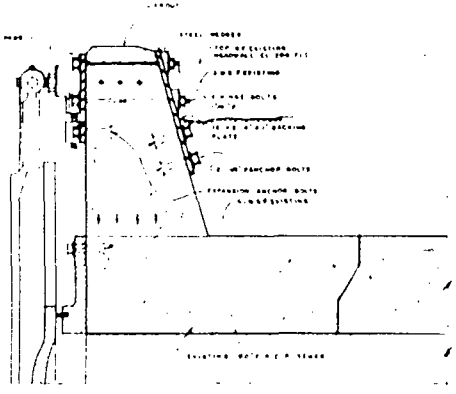
SECTION A-A

ANHEUSER BUSCH JUNCTION MANHOLE

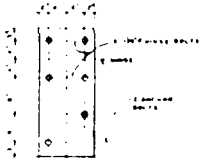


SECTION C-C

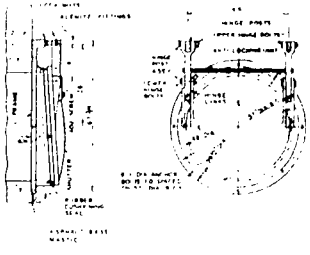
90° PIPE MANHOLE DETAIL



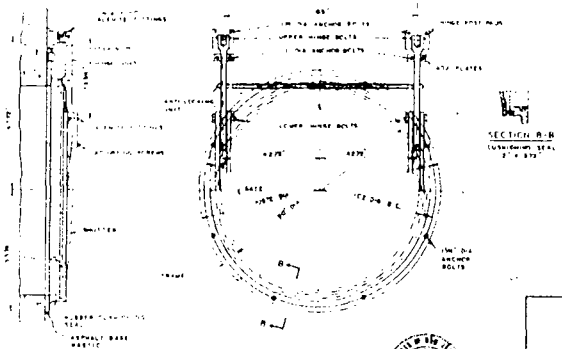
90° TIDE GATE MOUNTING DETAIL



ELEVATION OF BACKING PLATE



48" DIA TIDE GATE



90" DIA TIDE GATE

946200222

CITY OF NEWARK
ESSEX COUNTY, NEW JERSEY

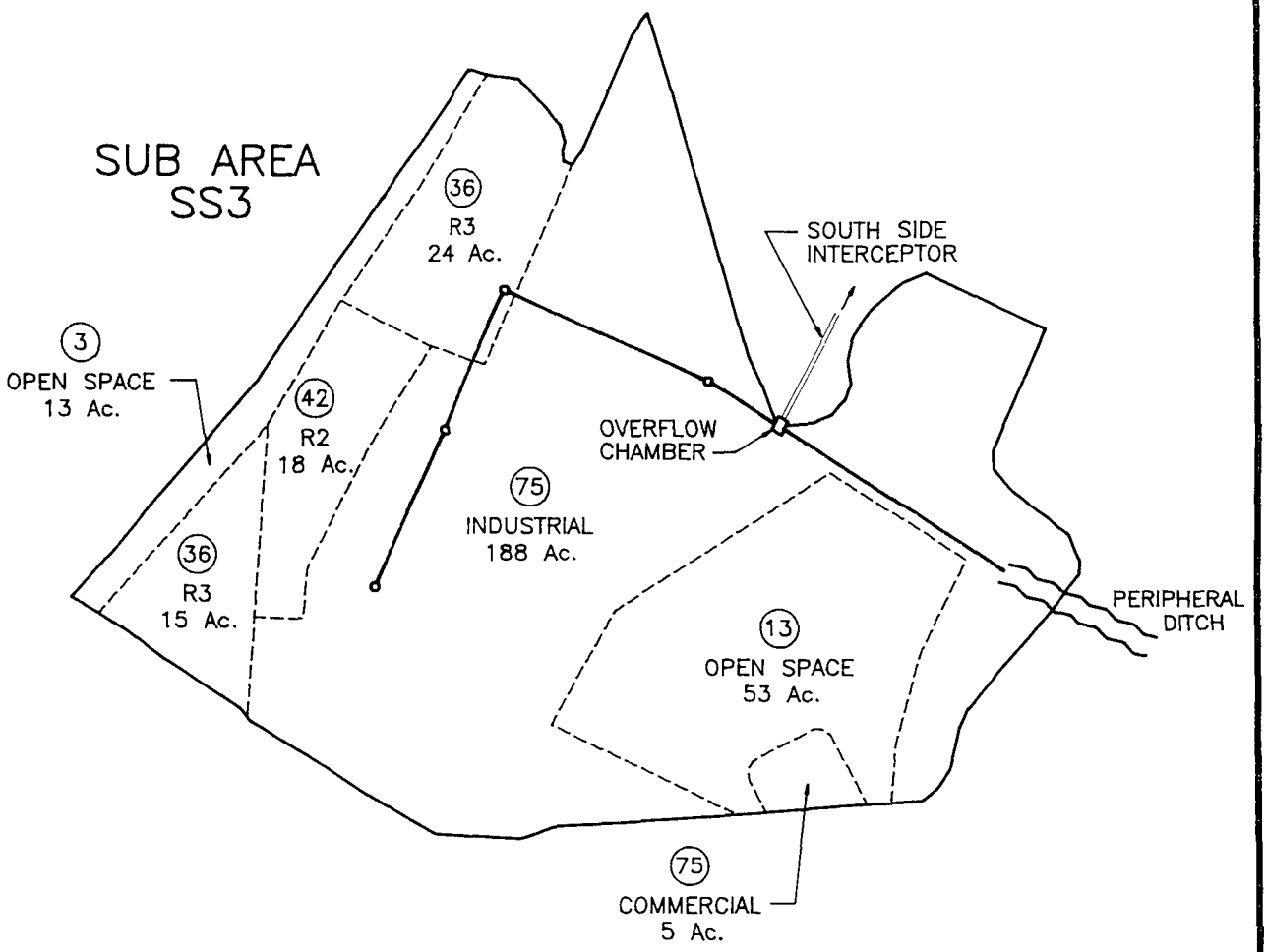
SOUTH SIDE INTERCEPTOR SEWER

WAVERLY DIVERSION FACILITIES

SHEET 8

PLATE D-2

LAND USE	%	ACRES
R3	12	39
R2	6	18
R1	---	---
OPEN SPACE	21	66
INDUSTRIAL	59	188
COMMERCIAL	2	5
TOTAL	100	316



LEGEND

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CITY OF NEWARK, SOUTH SIDE

Killam Associates Consulting Engineers

946200223

FIGURE SS-003